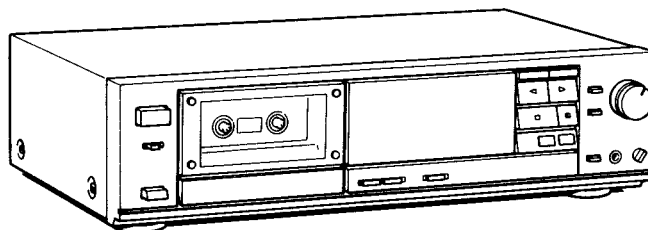


# TC-RX60ES

## SERVICE MANUAL

*US Model  
Canadian Model  
AEP Model  
UK Model*



### SPECIFICATIONS

#### Recording system

4-track 2-channel stereo

#### Fast-forward and rewind time

Approx. 90 sec. (with HF-60 cassette)

#### Bias

AC Bias

#### Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switch		
	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	59 dB	66 dB	72 dB
TYPE II (Sony UX-S)	58 dB	65 dB	71 dB
TYPE I (Sony HF-S)	54 dB	61 dB	67 dB

#### Total harmonic distortion

1.0 % (with Sony METAL-ES cassettes)

#### Frequency response (DOLBY NR OFF)

TYPE IV cassette (Sony METAL-ES)	20–20,000Hz (±3dB) : US model 30–20,000Hz (±3dB) : Canadian, AEP, UK model 30–15,000 Hz (±3 dB 0VU recording)
TYPE II cassette (Sony UX-S)	30–17,000 Hz (±3 dB)
TYPE I cassette (Sony HF-S)	30–15,000 Hz (±3 dB)

#### Wow and flutter 0.05% WRMS (NAB)

#### Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV (–20 dB)
	Input impedance	50 kilohms

Model Name Using Similar Mechanism	TC-R503ES
Tape Transport Mechanism Type	TCM-CMAY B-22

#### Outputs

Line outputs (phono jacks)	Rated output level	0.44 V (–5 dB) at a load impedance at 47 kilohms
	Load impedance	10 kilohms or less
Headphone output (stereo phone jack)	Output level	Variable from –20 dB to –∞ dB at load impedance 8 ohms

#### General

##### Power requirements

120V AC, 60Hz : US, Canadian model  
220V AC, 50/60Hz : AEP model  
240V AC, 50/60Hz : UK model

##### Power consumption

19W : US, Canadian model  
21W : AEP, UK model

##### Dimensions

Approx. 430 × 118 × 285 mm (w/h/d)  
(17 × 4<sup>3</sup>/<sub>4</sub> × 11<sup>1</sup>/<sub>4</sub> inches)

##### Weight

including projecting parts and controls  
Approx. 4.8 kg (10 lbs 10 oz)

##### Supplied accessories

Audio connecting cord (2)  
Remote control cord with 4-pin connectors (1)

\* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

"DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.





**STEREO CASSETTE DECK**  
**SONY®**

## FEATURES


The TC-RX60ES is an auto-reverse cassette deck equipped with a laseramorphous magnetic alloy head using LC-OFC winding for recording and playback, and features the following functions.

- **Quick-reverse function** prevents tape transport on the leader tape.
- **The Dolby HX PRO\* system** improves the linearity of the tape's high range response during recording.
- **Easy-to-read digital linear counter** shows the elapsed recording or playback time.
- **AMS, blank skip and music scan functions** provide easy access to a desired selection.

## SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

## ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

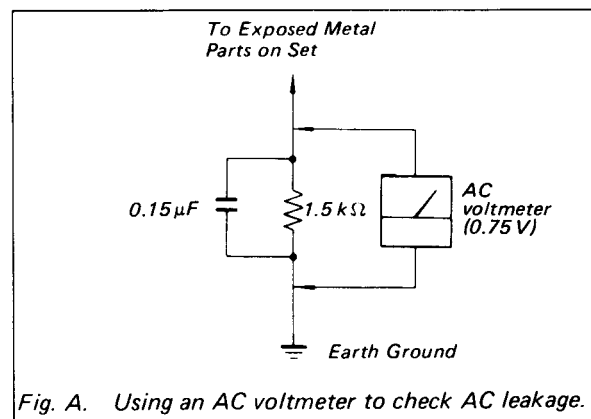


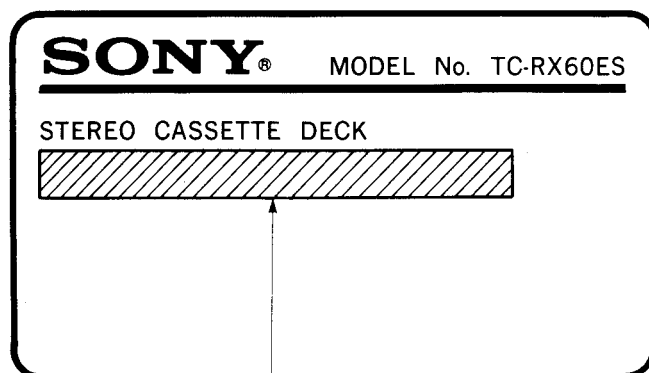
Fig. A. Using an AC voltmeter to check AC leakage.

# SECTION 1 GENERAL

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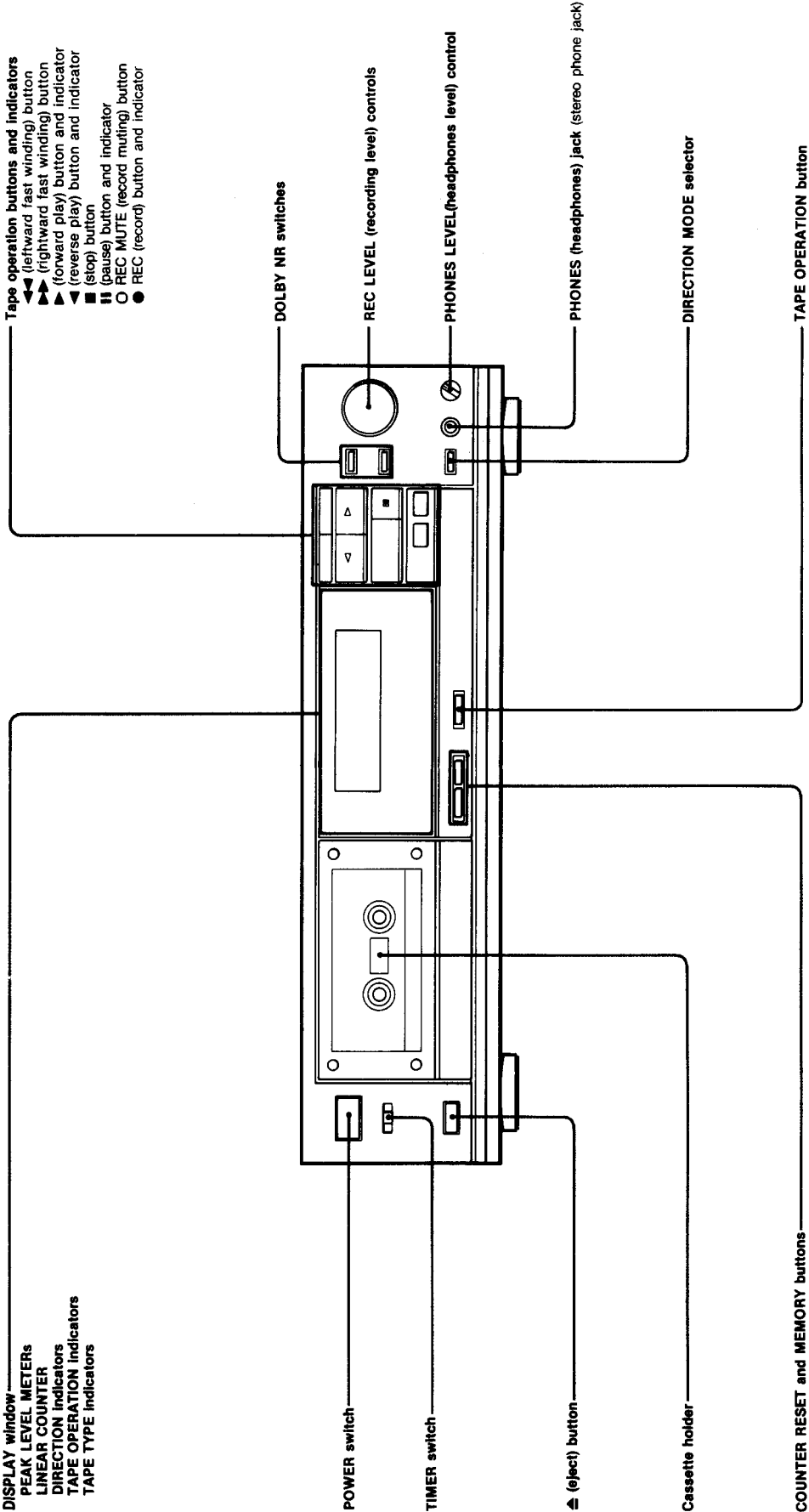
<u>Section</u>	<u>Title</u>	<u>Page</u>
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## 1-1. MODEL IDENTIFICATION (Specification Label)



US model:	AC 120V~60Hz	19W
Canadian model:	AC 120V~60Hz	19W
AEP model:	AC 220V~50/60Hz	21W
UK model:	AC 240V~50/60Hz	21W

1-2. LOCATION OF CONTROLS



## SECTION 2 MECHANICAL ADJUSTMENT

### PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab:  
record/playback head pinch roller  
erase head rubber belts  
capstan idlers
- Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed with the rated power supply voltage unless otherwise noted.

### Torque Measurement

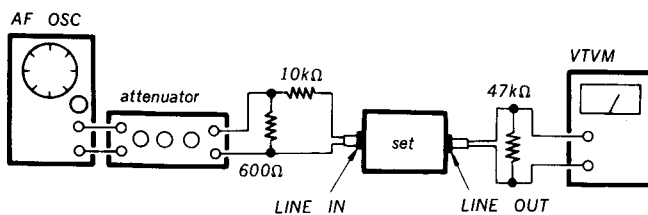
Mode	Torque Meter	Torque
Forward	CQ-102C	25-75g·cm (0.35-1.04oz·inch)
FWD back tension	CQ-102C	1-10g·cm (0.01-0.14oz·inch)
Reverse	CQ-102RB	25-75g·cm (0.35-1.04oz·inch)
REV back tension	CQ-102RB	1-10g·cm (0.01-0.14oz·inch)
EF, REW	CQ-201B	80-180g·cm (1.1-2.5oz·inch)

## SECTION 3 ELECTRICAL ADJUSTMENT

- Note:** The adjustment should be performed in the order given in this service manual.  
The adjustments should be performed for both L-CH and R-CH.
- Set the TAPE switches according to the tape as follows.

Tape	TAPE switch	LED Display
CS-17	AUTO	TYPE I
CS-26	AUTO	TYPE II
CS-42	AUTO	TYPE IV

- Switches and controls should be set as follows unless otherwise specified.  
DOLBY NR switch: OFF  
TIMER switch: OFF  
REC CAL control: center click
  - Standard Record:  
Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.
- Record Mode—



### Standard Input Level

	LINE IN
source impedance	10kΩ
input level	0.25V (-10dB)

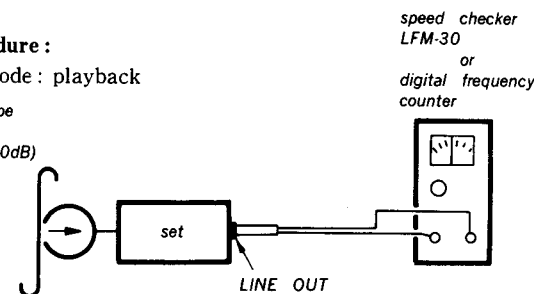
### Standard Output Level

	LINE OUT
load impedance	47kΩ
output level	0.44V (-5dB)

### SPEED ADJUSTMENT

**Procedure:**  
Mode: playback

test tape  
WS-48A  
(3kHz, 0dB)



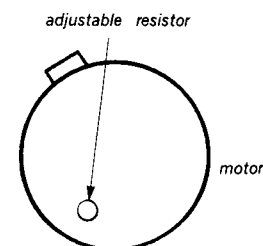
### Specification:

Speed checker	Digital frequency counter
-1-+1%	2,970-3,030Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25Hz).

### Adjustment Location:

adjustment the adjustable resistor of built in motor (adjustment by the insert to driver Speed in fastest that turn the clockurse.)

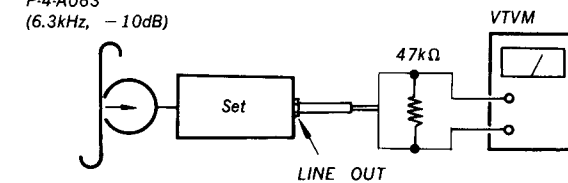


### RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

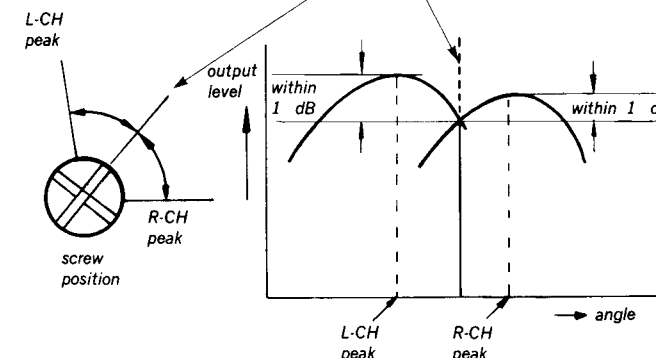
#### Procedure:

- Mode: playback

test tape  
P-4-A063  
(6.3kHz, -10dB)

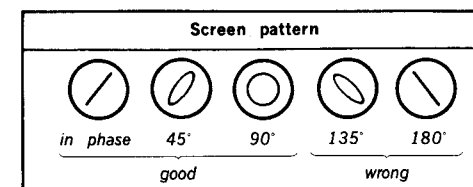
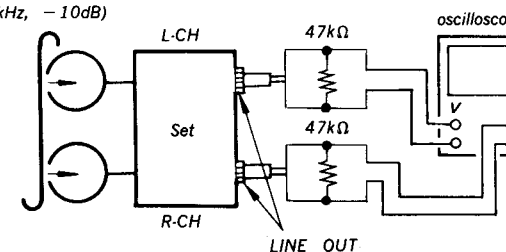


- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.

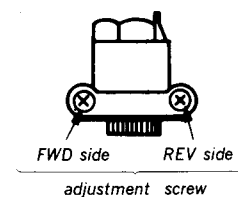


- phase Check  
Mode: playback

test tape  
P-4-A063  
(6.3kHz, -10dB)



Adjustment Location: REC/PB head

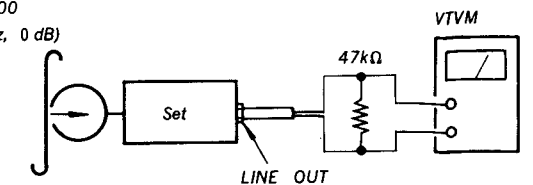


### PLAYBACK LEVEL ADJUSTMENT

#### Procedure:

- mode: Playback

test tape  
P-4-L300  
(315Hz, 0 dB)



#### Specification:

LIIN OUT Level: 0.41 to 0.46V  
(-5.5 to -4.5dB)

Level difference between charrels: within 0.5dB

Make sure that line-output level does not change When reeking the playback and stop.

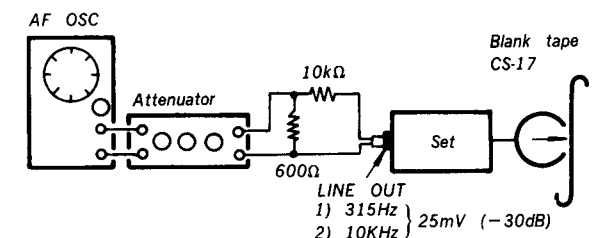
### RECORD BIAS ADJUSTMENT

#### Setting:

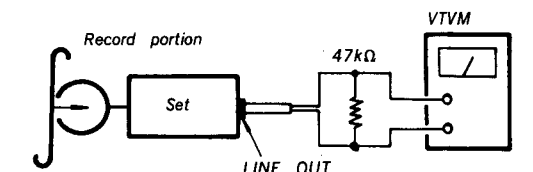
REC LEVEL knob shall be at the specilied record position (see page 5.)

#### Procedure:

- Mode Record:

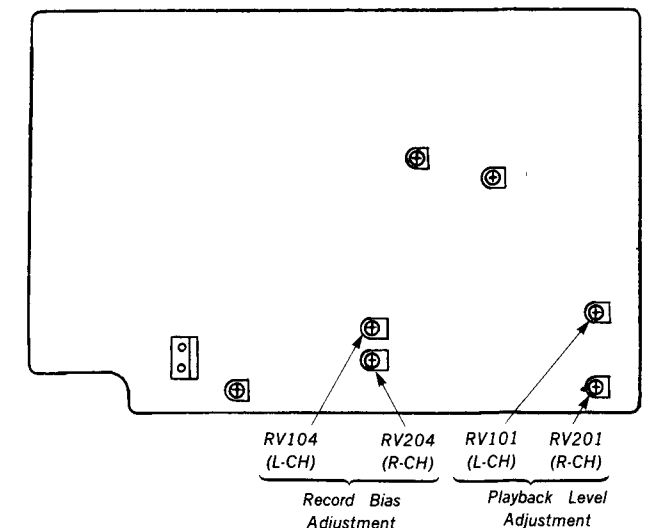


- Mode: Playback

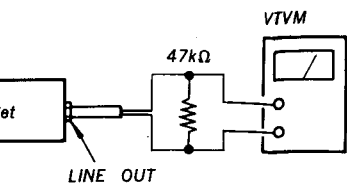


Adjust RV104, 204 so that playback output of 10KHz is 0±0.5dB.

Adjustment Location: audio/System control board



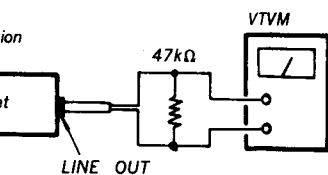
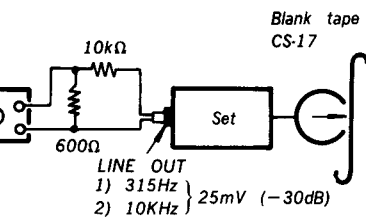
## ADJUSTMENT



1 to 0.46V  
5.5 to -4.5dB)  
een charrels: within 0.5dB  
-output level does not change When  
k and stop.

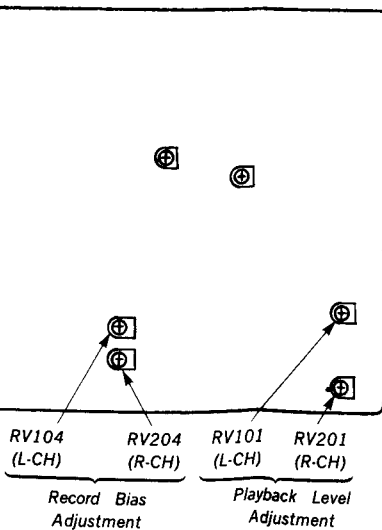
## JUSTMENT

shall be at the specilied record position



that playback output of 10KHz is

audio/System control board



## QUICK REVERSE SENSITIVITY ADJUSTMENT

Setting :

Direction mode switch:

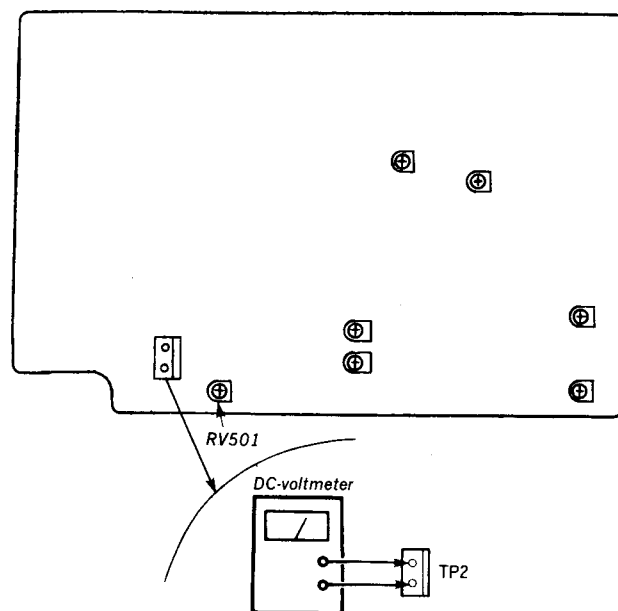
Procedure :

1. Connect DC -voltmeter to TP 2 of system control board.
2. Mount the vacant (blank) cassette to set FWD mode.
3. Adjust RV501 so that the reading of DC-voltmter is 10V.

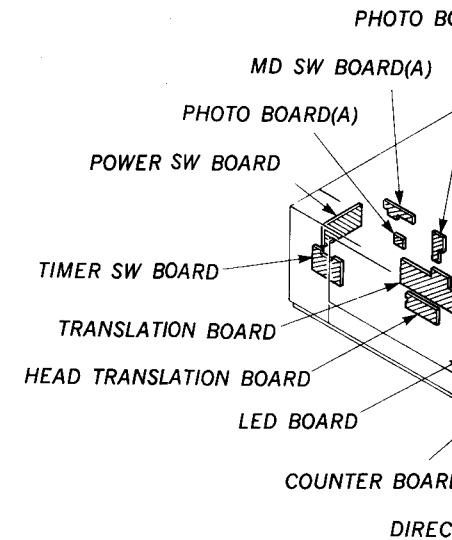
Specification :  $10V \pm 0.5V$

4. Pepeat FWD and Stop 2-3 times, and again check the voltage.
5. Be sure that reverse is made at the connected part between leader tape and magnetic body.

Adjustmest Location : audio/systhm control board



## 4-1. CIRCUIT BOARD LOCATION

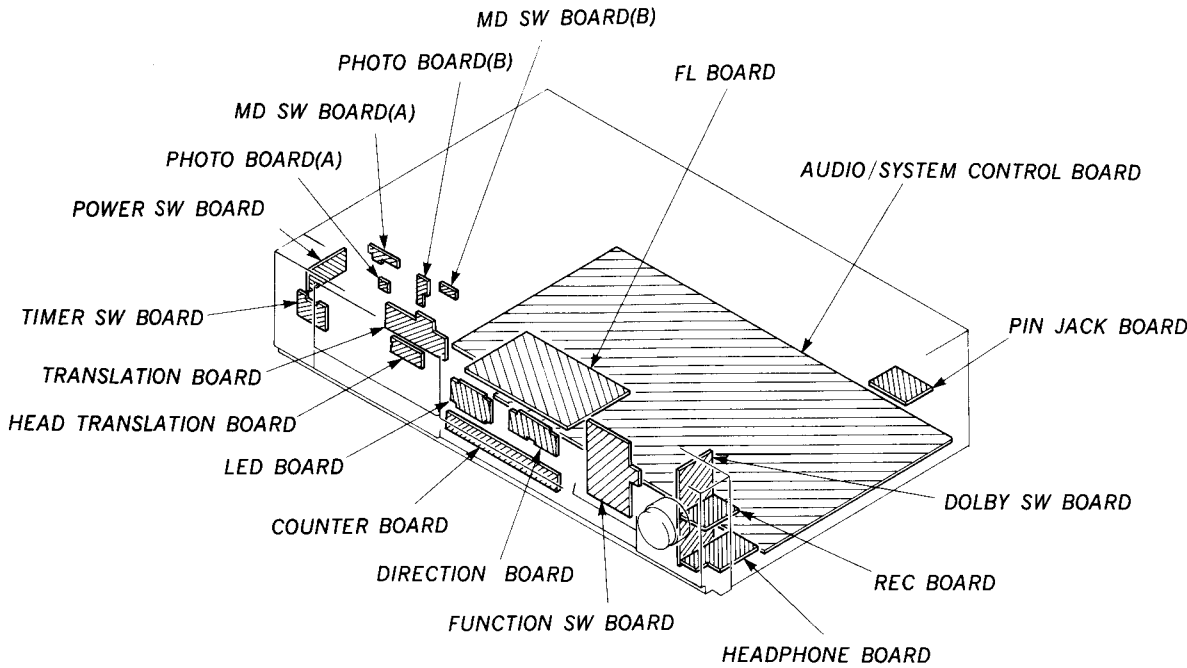


## 4-2. SEMICONDUCTOR LEAD LAYOUTS

<b>CX10034</b> <b>TC4019BP</b>  16 15 14 13 12 11 10 9 1 2 3 4 5 6 7 8 (Top view)	<b>M5220P</b> <b>μPC4570C</b>  8 7 6 5 1 2 3 4 (Top view)
<b>CX20187</b> <b>LC6520C-3177</b> <b>MB88517B-510S</b>  14 13 12 11 10 9 8 1 2 3 4 5 6 7 (Top view)	<b>TC4069UBP</b> <b>μPD4011BC</b>  14 13 12 11 10 9 8 1 2 3 4 5 6 7 (Top view)
<b>M50761-417P</b>  20 18 16 14 12 19 17 15 13 11 1 2 3 4 5 6 7 8 9 10 (Top view)	<b>μPC1297CA</b>  18 10 1 2 3 4 5 6 7 8 9 (Top view)
<b>M5201L</b> <b>M5218L</b>  1 2 3 4 5 6 7 8	<b>μPC4570HA</b>  1 2 3 4 5 6 7 8

SECTION 4  
DIAGRAMS

4-1. CIRCUIT BOARD LOCATION



4-2. SEMICONDUCTOR LEAD LAYOUTS

<b>CX10034</b> <b>TC4019BP</b>  (Top view)	<b>M5220P</b> $\mu$ <b>PC4570C</b>  (Top view)	<b>DTA114ES</b> <b>DTC114ES</b> <b>DTC143TS</b> <b>DTC144ES</b> <b>2SC634SP</b> 	<b>2SA952</b> <b>2SB647</b> 	<b>2SK246GR</b> 	<b>AY5638S</b> 
<b>CX20187</b> <b>LC6520C-3177</b> <b>MB88517B-510S</b>  (Top view)	<b>TC4069UBP</b> $\mu$ <b>PD4011BC</b>  (Top view)		<b>2SB548</b> <b>2SD414</b> <b>2SD809</b> 	<b>1SS132</b> <b>10E2</b> 	<b>BG5628S</b> <b>BR5628S</b> 
<b>M50761-417P</b>  (Top view)	$\mu$ <b>PC1297CA</b>  (Top view)	<b>2SA1150</b> <b>2SA1175</b> <b>2SC2785</b> 		<b>2SD1585-K</b> 	<b>HZS11A1L</b> <b>HZS12C1L</b> <b>HZS6A1L</b> <b>HZS7B2L</b> <b>HZS7C1L</b> 
<b>M5201L</b> <b>M5218L</b> 	$\mu$ <b>PC4570HA</b> 	<b>2SA1409L</b> <b>2SA733</b> <b>2SB1013</b> <b>2SC2001</b> <b>2SC3622L</b> <b>2SD1387</b> 	<b>2SD774</b> 		<b>GL-5HY5</b> 
					<b>SEL2410E-C</b> 

### 4-3. PRINTED WIRING BOARD

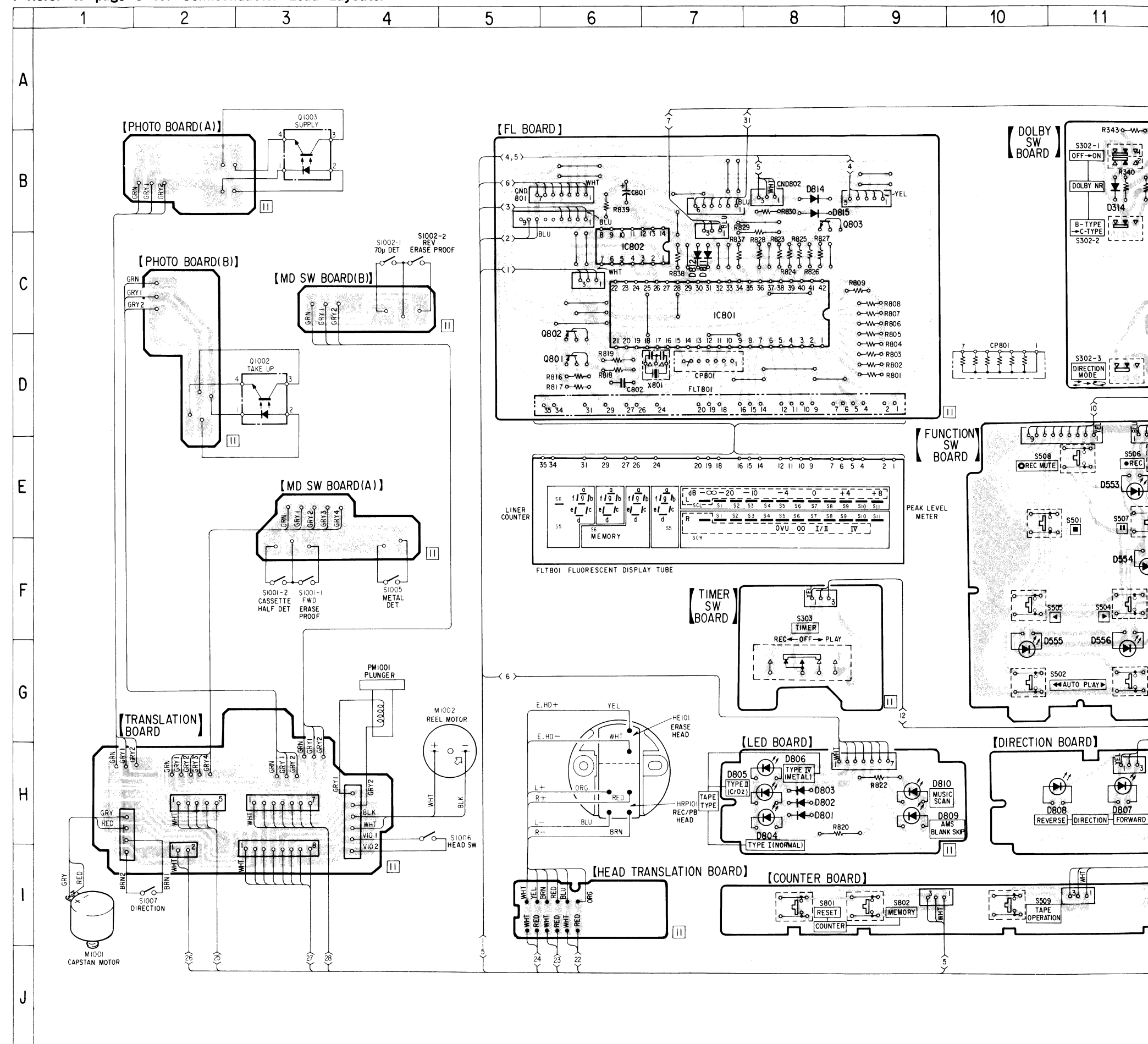
. Refer to page 8 for Semiconductor Lead Layouts.

#### ● Semiconductor Location

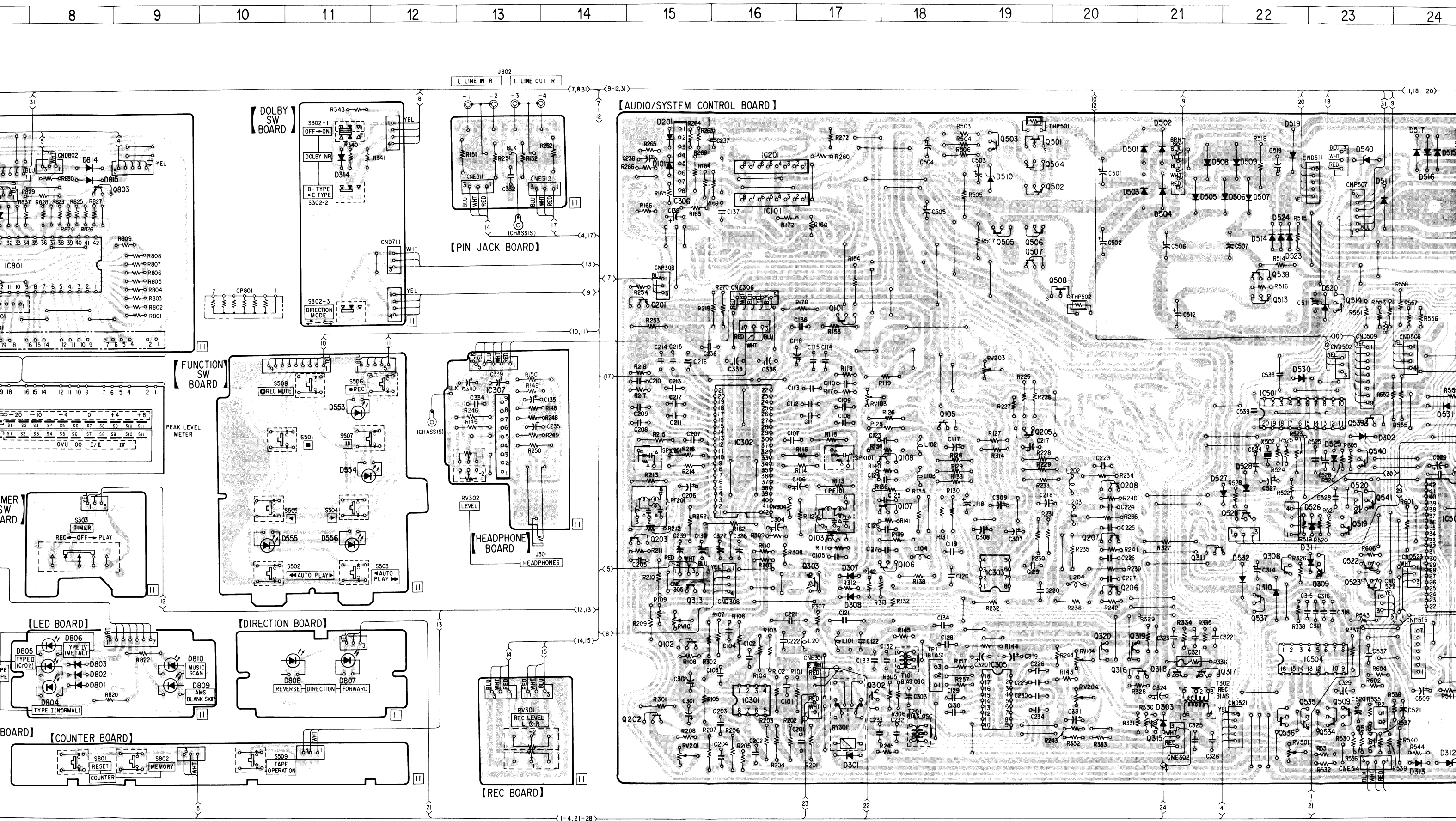
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D101	B-15	D803	H-8	Q317	H-21
D201	B-15	D804	H-8	Q318	H-21
D301	I-17	D805	H-8	Q319	H-21
D302	E-23	D806	H-8	Q320	H-20
D303	I-20	D807	H-11	Q501	B-19
D307	G-17	D808	H-11	Q502	B-19
D308	G-17	D809	H-8	Q503	B-19
D310	G-22	D810	H-8	Q504	B-19
D311	G-23	D811	C-7	Q505	C-19
D312	I-24	D812	C-7	Q506	C-19
D313	I-24	D814	B-8	Q507	C-19
D314	B-11	D815	B-8	Q508	D-20
D501	B-21			Q509	I-23
D502	B-21	IC101	B-16	Q511	B-26
D503	B-21	IC201	B-16	Q512	B-26
D504	B-21	IC301	H-16	Q513	D-22
D505	B-21	IC302	E-16	Q514	E-23
D506	B-22	IC303	G-19	Q515	C-25
D507	B-22	IC305	H-19	Q516	C-25
D508	B-21	IC306	B-15	Q518	I-23
D509	B-22	IC307	E-13	Q519	F-23
D510	B-19	IC501	E-22	Q520	F-23
D511	C-23	IC502	G-24	Q521	F-22
D514	C-22	IC503	H-26	Q522	G-23
D515	B-24	IC504	H-23	Q523	G-23
D516	B-24	IC505	D-25	Q525	E-26
D517	B-24	IC506	E-25	Q526	E-26
D518	B-26	IC801	C-7	Q527	F-26
D519	B-22	IC802	C-6	Q528	F-26
D520	E-23			Q529	G-25
D521	C-25	Q101	D-17	Q530	G-25
D522	D-26	Q102	H-15	Q531	G-26
D523	C-22	Q103	F-17	Q531	G-26
D524	C-22	Q105	E-18	Q532	G-26
D525	F-23	Q106	G-18	Q533	E-26
D526	F-23	Q107	F-18	Q534	I-23
D527	F-22	Q108	F-18	Q535	I-23
D528	F-22	Q201	D-15	Q536	I-22
D530	E-22	Q202	I-15	Q537	G-22
D531	E-24	Q203	F-15	Q538	C-22
D532	G-22	Q205	E-19	Q539	E-23
D534	C-25	Q206	G-20	Q540	F-23
D540	B-23	Q207	F-20	Q541	F-23
D548	F-26	Q208	F-20	Q542	C-26
D549	F-26	Q302	H-17	Q543	C-25
D550	C-26	Q303	G-17	Q544	C-25
D553	E-11	Q308	G-22	Q801	D-6
D554	F-12	Q309	G-23	Q802	D-6
D555	F-10	Q311	G-21	Q803	B-8
D556	F-11	Q313	G-15	Q1002	D-2
D801	H-8	Q315	I-21	Q1003	B-2
D802	H-8	Q316	H-21		

#### Note

● ○ : parts extracted from the component side.

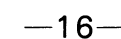


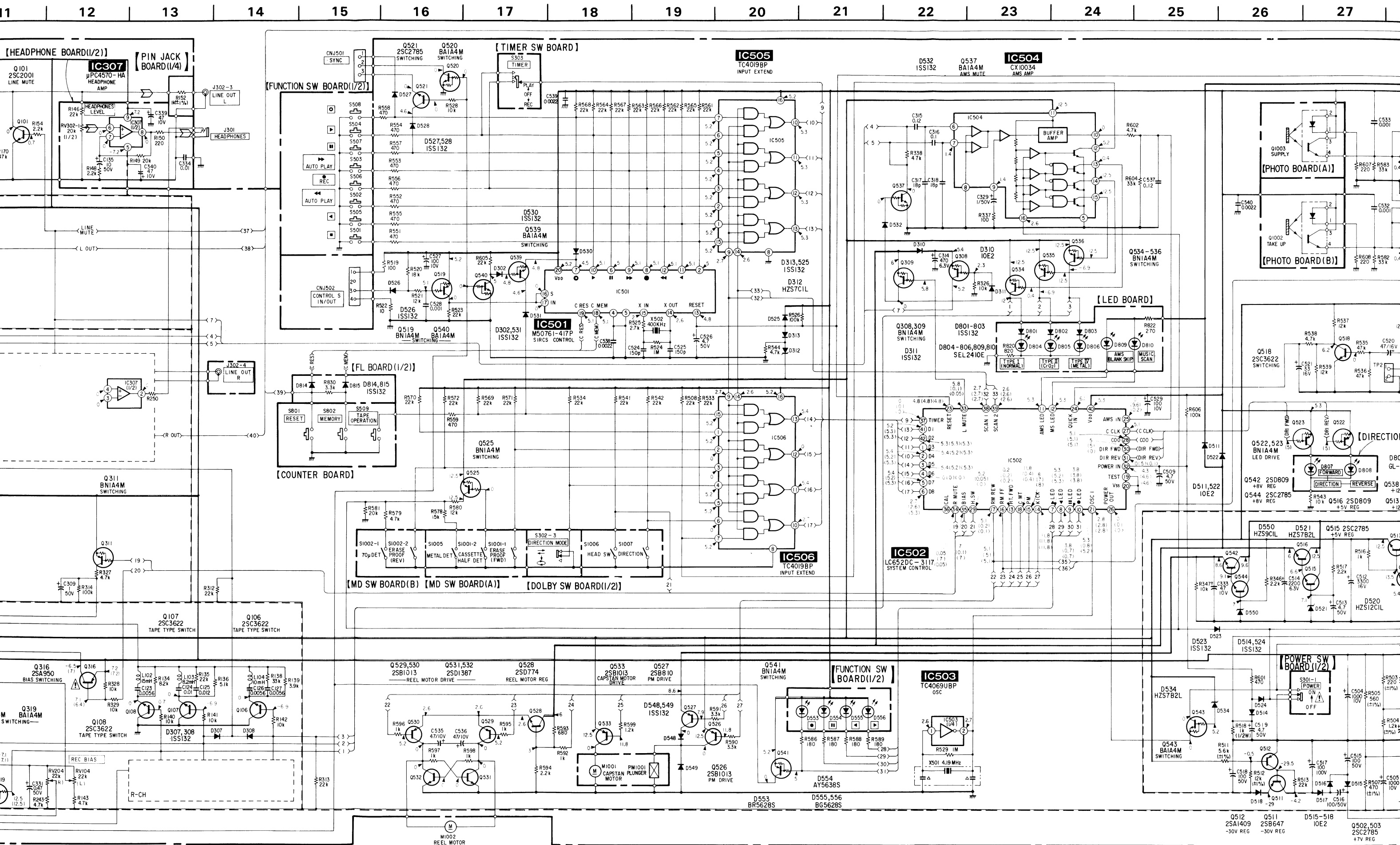




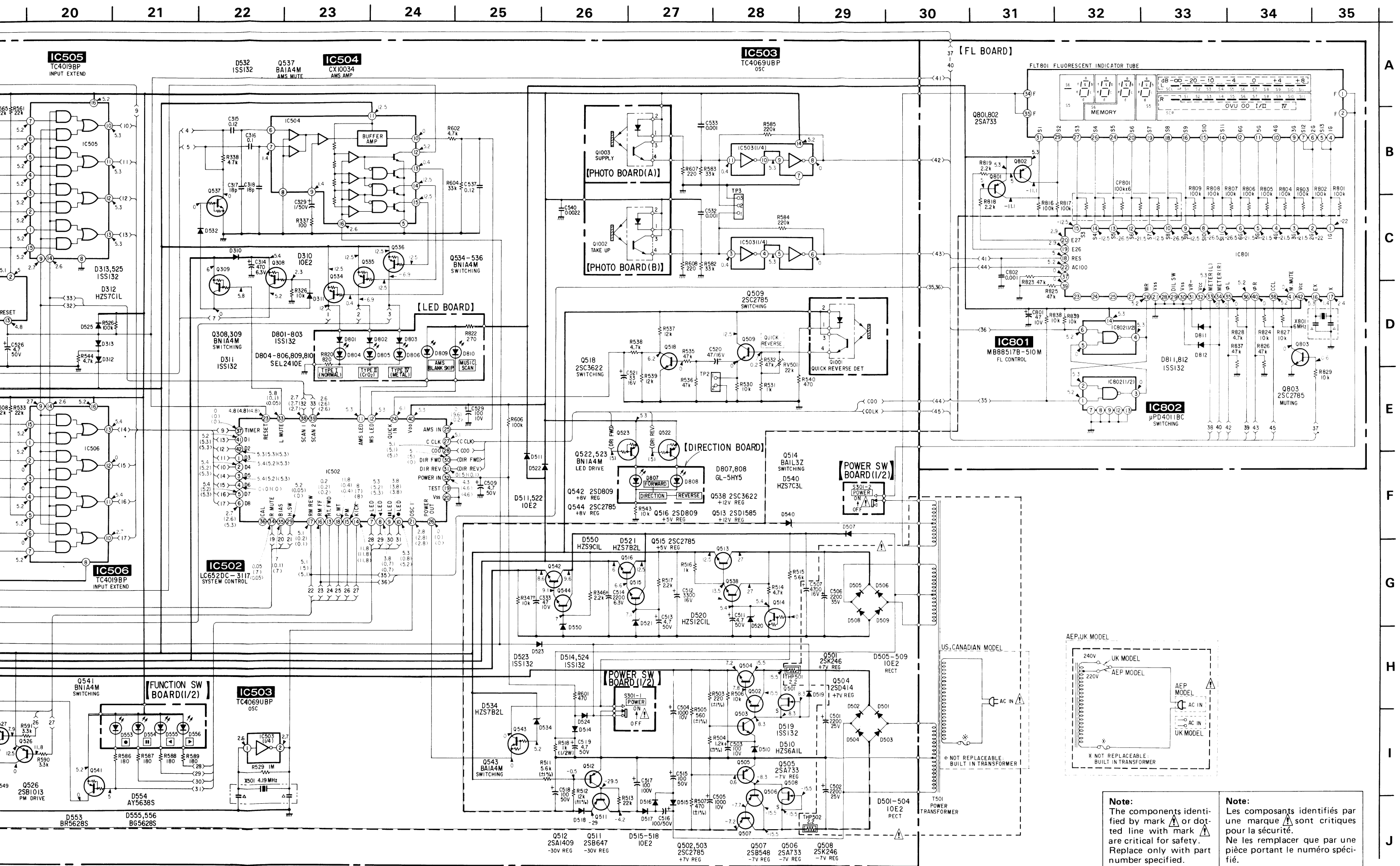






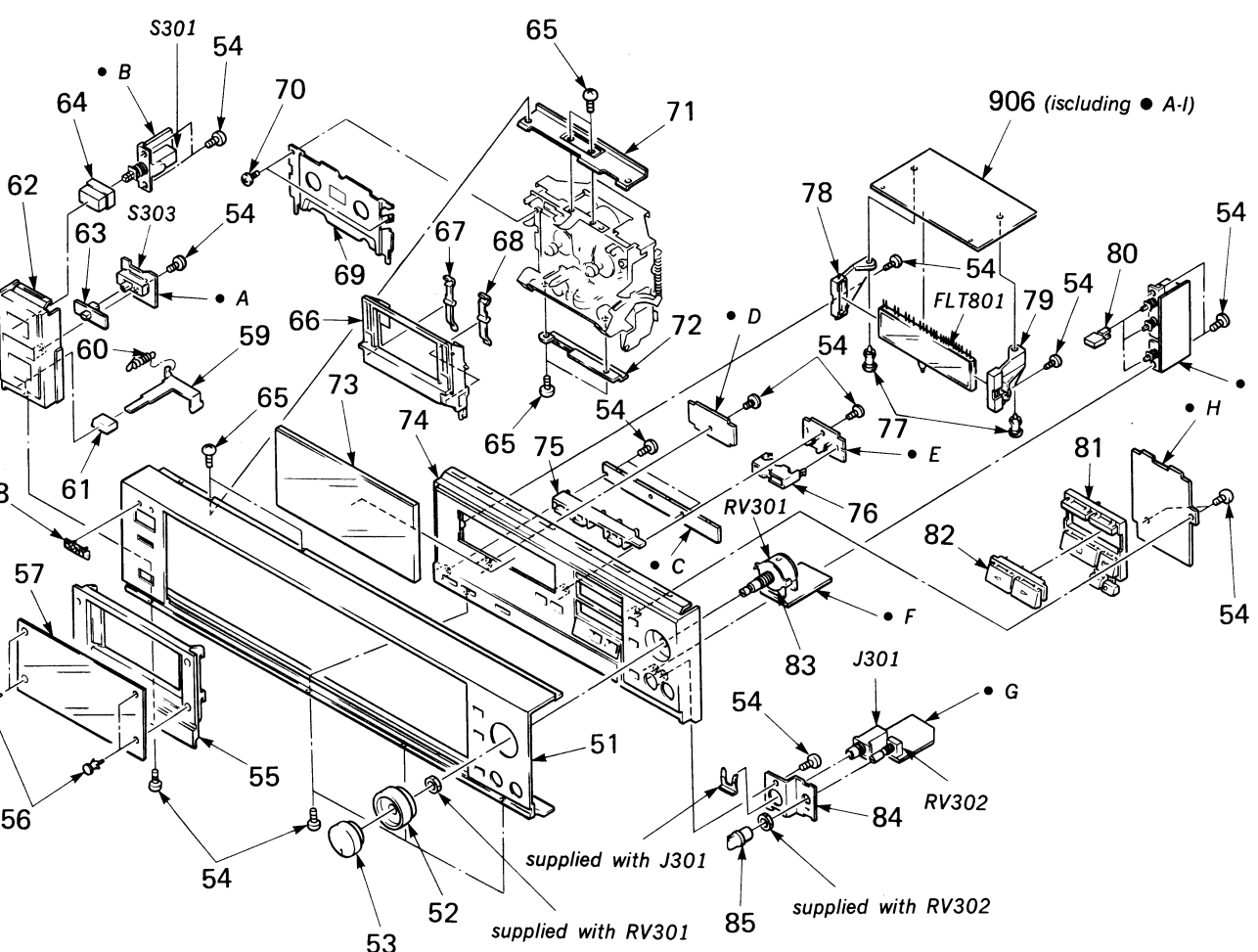




A  
B  
C  
D  
E  
F  
G  
H  
I  
J

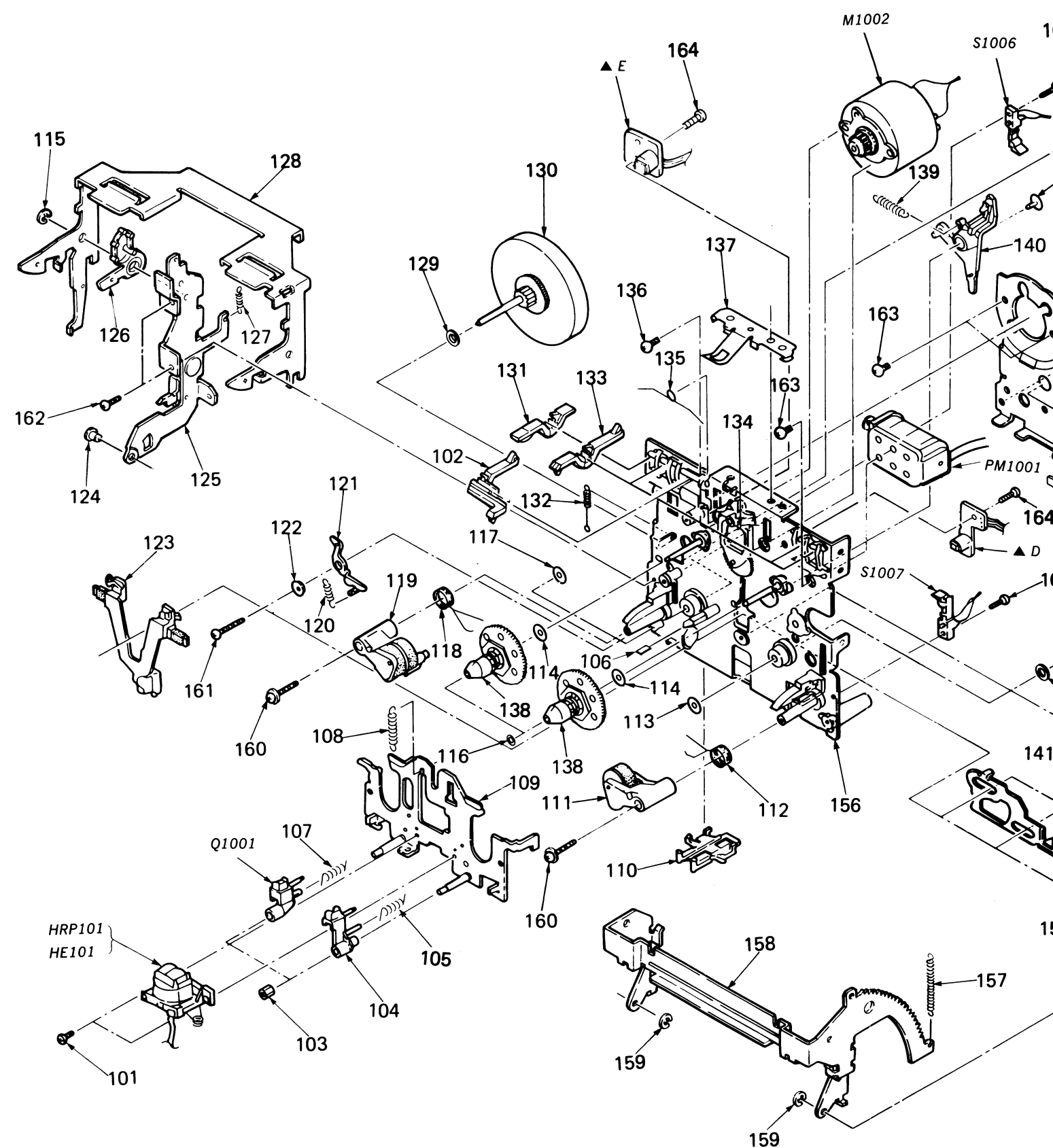


## FRONT PANEL SECTION



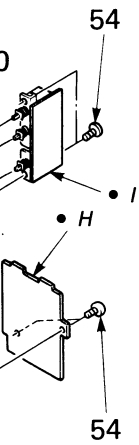
Part No.	Description	Remark
3-332-575-31	(US, Canadian)....PANEL, FRONT	
3-332-575-41	(AEP, UK)....PANEL, FRONT	
3-332-589-01	KNOB (REC VOL-LEFT)	
3-332-590-01	KNOB (REC VOL-RIGHT)	
7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
3-332-572-21	(US)....LID, CASSETTE	
3-332-572-31	(EXCEPT FOR US)....LID, CASSETTE	
*3-337-123-01	PIN, STOPPER, CASSETTE WINDOW	
3-332-557-01	WINDOW (C)	
4-908-848-01	EMBLEM, SONY	
*3-332-564-01	SLIDER (EJC)	
3-571-829-01	SPRING, TENSION	
3-323-410-31	BUTTON, EJECT	
3-332-574-01	ESCUTCHEON (LEFT)	
3-307-538-21	KNOB, SWITCH, TIMER	
4-917-460-01	KNOB, POWER	
7-682-147-01	SCREW +BVTT 3X6 (S)	
X-3332-448-1	HOLDER ASSY, CASSETTE	
3-307-371-00	SPRING (LEFT)	
3-307-372-00	SPRING (RIGHT)	
*3-332-547-01	PLATE, ORNAMENTAL	

Ref.No	Part No.	Description	Remark
70	7-621-772-00	SCREW +B 2X3	
71	*3-332-561-01	BRACKET (MDU)	
72	*3-332-560-01	BRACKET (MDB)	
73	3-332-571-11	WINDOW (M)	
74	3-346-263-01	ESCUTCHEON (RIGHT)	
75	3-332-570-11	BUTTON (C)	
76	*4-908-323-01	HOLDER (W), LED	
77	4-812-134-11	RIVET NYLON, 3.5	
78	*3-343-608-01	HOLDER (LEFT), FL TUBE	
79	*3-343-607-01	HOLDER (RIGHT), FL TUBE	
80	4-864-410-21	KNOB (4X10), SQUARE	
81	X-3332-528-1	BUTTON (A) ASSY	
82	X-3332-529-1	BUTTON (B) ASSY	
83	*3-330-012-01	LUG, REC VOL	
84	*3-332-559-01	BRACKET (HD)	
85	4-901-708-11	KNOB, LOV	
906	*A-2056-405-A	MOUNTED PCB, FL	
FLT801	*1-519-447-11	INDICATOR TUBE, FLUORESCENT	
J301	1-507-796-21	JACK (HEADPHONES)	
RV301	1-238-097-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	
S301	*1-570-103-21	SWITCH, PUSH (1KEY) (POWER)	

5-3. MECHANISM SECTION  
(TCM-CMAY B-22)

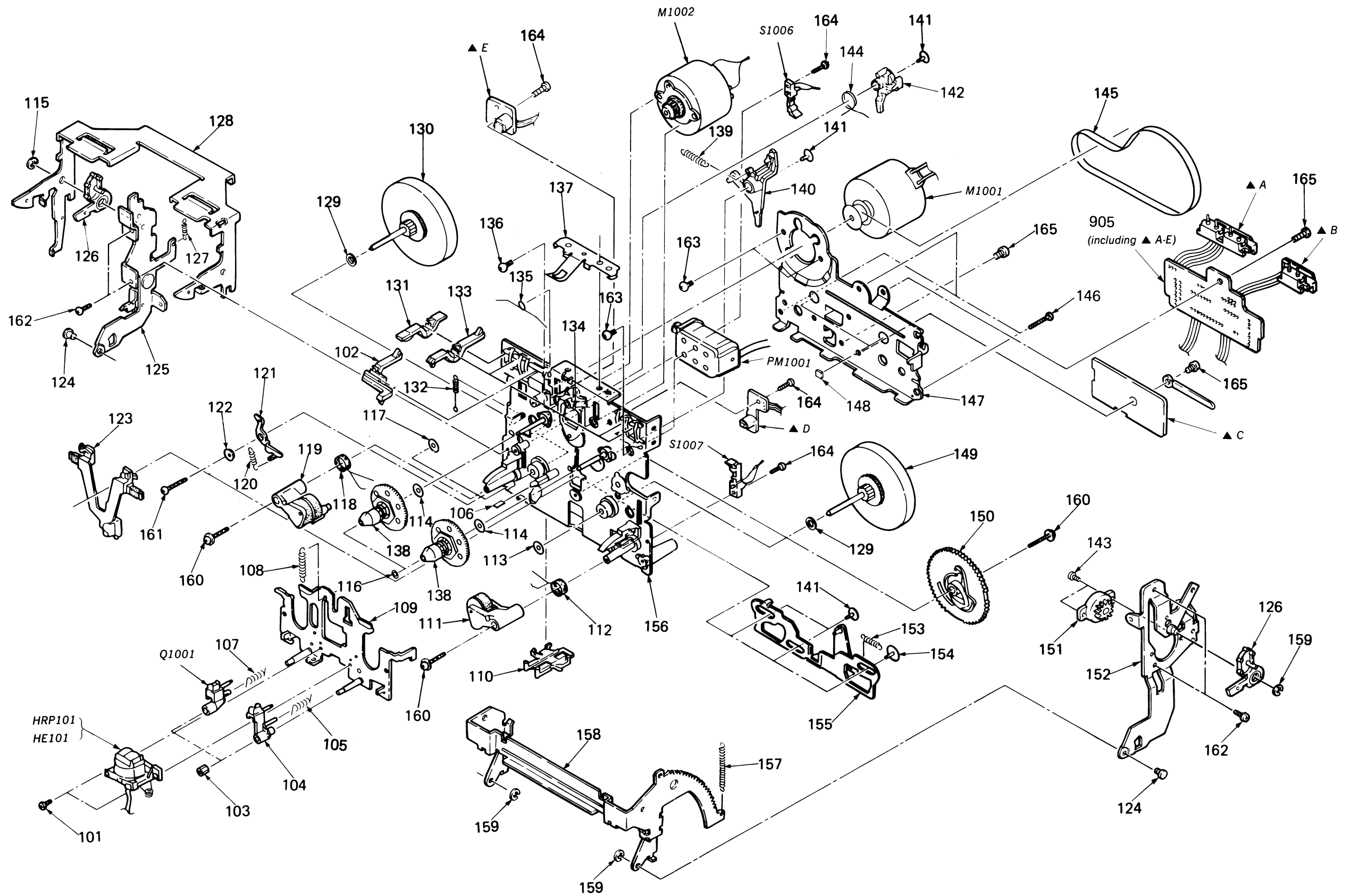
5-3. MECHANISM SECTION  
(TCM-CMAY B-22)

• A-I)



Remark

EVEL)





Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
101	3-391-109-01	SCREW, WASHER		138	X-3391-142-1	REEL (T) ASSY	
102	3-391-193-01	LEVER, METAL		139	3-391-133-01	SPRING	
103	3-391-110-01	NUT, ADJUSTMENT		140	X-3391-146-1	ARM ASSY, PLAY	
104	3-391-111-01	GUIDE, TAPE		141	3-391-126-01	CAP	
105	3-391-112-01	SPRING (RIGHT)		142	3-392-701-01	ARM, DIRECTION	
106	3-391-162-01	REFLECTOR		143	7-685-780-04	SCREW +PTT 2X3 (S)	
107	3-391-187-01	SPRING (LEFT)		144	3-391-199-01	SPRING (DIRECTION)	
108	3-391-114-01	SPRING		145	3-391-192-01	BELT, MAIN	
109	X-3391-154-1	PLATE ASSY, HEAD		146	7-685-131-19	SCREW +P 2.6X4 TYPE2 NON-SLIT	
110	3-391-137-01	HOLDER, LEAD		147	*3-391-130-01	BRACKET (B), F/W	
111	X-3391-104-1	PINCH ROLLER ASSY		148	3-391-129-01	SPACER	
112	3-391-115-01	SPRING (RIGHT)		149	X-3391-145-1	FLYWHEEL ASSY	
113	3-391-119-01	SEAL,WASHER OIL		150	3-391-197-01	GEAR (I), CAM	
114	3-701-437-11	WASHER		151	X-3391-151-1	DAMPER ASSY	
115	7-624-105-04	STOP RING 2.3		152	*X-3391-150-1	BKT ASSY, DAMPER	
116	3-701-436-11	WASHER, 1.6		153	3-391-127-01	SPRING	
117	3-391-117-01	SEAL, WASHER OIL		154	3-391-143-01	CAP	
118	3-391-116-01	SPRING (LEFT)		155	X-3391-112-1	PLATE ASSY, SLIDE	
119	X-3391-105-1	PINCH POLLER ASSY		156	X-3391-110-1	CHASSIS ASSY	
120	3-391-122-01	SPRING (A)		157	3-391-184-01	SPRING	
121	3-391-121-01	ARM, EJECT SAFETY		158	*3-391-182-01	HOLDER, CASSETTE	
122	3-391-120-01	CALLOR		159	7-624-102-04	STOP RING 1.5, TYPE-E	
123	X-3391-108-1	BRAKE ASSY		160	7-685-107-19	SCREW +P 2X12 TYPE2 SLIT	
124	3-391-183-01	SHAFT (B), HOLDER FULCRUM		161	7-685-105-19	SCREW +P 2X8 TYPE2 SLIT	
125	*X-3391-152-1	ARM ASSY, EJECT		162	7-685-790-04	SCREW +PTT 2.6X4 (S)	
126	3-391-158-01	LEVER, STOP		163	7-628-253-90	SCREW +PS 2.6X4	
127	3-391-181-01	SPRING, RETURN LEVER		164	7-685-104-19	SCREW +P 2X6 TYPE2 SLIT	
128	*3-391-180-01	ARM,EJECT		165	7-685-750-04	SCREW +PTT 3X5 (S)	
129	3-701-438-11	WASHER, 2.5		905	1-589-052-11	PCB BOARD ASSY	
130	X-3391-125-1	FLYWHEEL ASSY		HRP101	} X-3391-143-1	HEAD ASSY, ROTARY	
131	3-391-178-01	LEVER,PACK		HE101			
132	3-391-139-01	SPRING		M1001	X-3391-130-1	MOTOR ASSY	
133	3-391-188-01	LEVER, REC		M1002	X-3391-156-1	MOTOR ASSY	
134	X-3391-111-1	IDLER ASSY		PM1001	1-454-440-11	SOLENOID, PLUNGER	
135	3-391-124-01	SPRING		S1006	1-570-719-11	SWITCH, LEAF	
136	7-628-254-15	SCREW, WASHER		S1007	1-570-721-11	SWITCH, LEAF	
137	3-391-177-01	SPRING					

## SECTION 6 ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**MF:  $\mu$ F, PF:  $\mu$ PF.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**In each case, U:  $\mu$ , for example:UA....:  $\mu$ A...., UPA....:  $\mu$ PA....,  
UPC....:  $\mu$ PC, UPD....:  $\mu$ PD....

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
901	$\Delta$ 1-551-506-XX	(US, Canadian)....CORD, POWER		C207	1-106-359-00	MYLAR	0.0047MF 5% 50V
902	$\Delta$ 1-556-035-00	(UK)....CORD, POWER		C208	1-136-173-00	FILM	0.47MF 5% 50V
903	$\Delta$ 1-551-908-00	(AEP)....CORD, POWER, EULO PLUG		C209	1-136-167-00	FILM	0.15MF 5% 50V
904	*A-2056-414-A	MOUNTED PCB, SYSTEM CONTROL		C210	1-136-155-00	FILM	0.015MF 5% 50V
905	1-589-052-11	PCB BOARD ASSY		C211	1-136-169-00	FILM	0.22MF 5% 50V
906	*A-2056-405-A	MOUNTED PCB, FL		C212	1-136-163-00	FILM	0.068MF 5% 50V
<b>CAPACITOR</b>				C213	1-136-161-00	FILM	0.047MF 5% 50V
C101	1-110-222-11	MYLAR	0.0012MF 5% 50V	C214	1-130-481-00	MYLAR	0.0068MF 5% 50V
C102	1-130-487-00	MYLAR	0.022MF 5% 50V	C215	1-136-153-00	FILM	0.01MF 5% 50V
C103	1-124-657-00	ELECT	10MF 20% 50V	C216	1-124-927-11	ELECT	4.7MF 20% 50V
C104	1-130-488-00	MYLAR	0.027MF 5% 50V	C217	1-124-927-11	ELECT	4.7MF 20% 50V
C105	1-106-353-00	MYLAR	0.0027MF 5% 50V	C218	1-124-908-11	ELECT	22MF 20% 25V
C106	1-124-927-11	ELECT	4.7MF 20% 50V	C219	1-110-241-11	MYLAR	0.047MF 5% 50V
C107	1-106-359-00	MYLAR	0.0047MF 5% 50V	C220	1-124-657-00	ELECT	10MF 20% 50V
C108	1-136-173-00	FILM	0.47MF 5% 50V	C221	1-162-285-31	CERAMIC	180PF 10% 50V
C109	1-136-167-00	FILM	0.15MF 5% 50V	C222	1-107-210-00	MICA	22PF 5% 500V
C110	1-136-155-00	FILM	0.015MF 5% 50V	C223	1-130-480-00	MYLAR	0.0056MF 5% 50V
C111	1-136-169-00	FILM	0.22MF 5% 50V	C224	1-130-483-00	MYLAR	0.01MF 5% 50V
C112	1-136-163-00	FILM	0.068MF 5% 50V	C225	1-130-484-00	MYLAR	0.012MF 5% 50V
C113	1-136-161-00	FILM	0.047MF 5% 50V	C226	1-130-480-00	MYLAR	0.0056MF 5% 50V
C114	1-130-481-00	MYLAR	0.0068MF 5% 50V	C227	1-130-480-00	MYLAR	0.0056MF 5% 50V
C115	1-136-153-00	FILM	0.01MF 5% 50V	C228	1-136-153-00	FILM	0.01MF 5% 50V
C116	1-124-927-11	ELECT	4.7MF 20% 50V	C229	1-136-157-00	FILM	0.022MF 5% 50V
C117	1-124-927-11	ELECT	4.7MF 20% 50V	C230	1-136-165-00	FILM	0.1MF 5% 50V
C118	1-124-908-11	ELECT	22MF 20% 25V	C232	1-136-272-00	FILM	68PF 5% 630V
C119	1-110-241-11	MYLAR	0.047MF 5% 50V	C233	1-136-433-11	FILM	100PF 5% 630V
C120	1-124-657-00	ELECT	10MF 20% 50V	C234	1-130-471-00	MYLAR	0.001MF 5% 50V
C121	1-162-285-31	CERAMIC	180PF 10% 50V	C235	1-123-875-11	ELECT	10MF 20% 50V
C122	1-107-210-00	MICA	22PF 5% 500V	C236	1-124-657-00	ELECT	10MF 20% 50V
C123	1-130-480-00	MYLAR	0.0056MF 5% 50V	C237	1-124-274-00	ELECT	4.7MF 20% 50V
C124	1-130-483-00	MYLAR	0.01MF 5% 50V	C238	1-124-927-11	ELECT	4.7MF 20% 50V
C125	1-130-484-00	MYLAR	0.012MF 5% 50V	C239	1-124-927-11	ELECT	4.7MF 20% 50V
C126	1-130-480-00	MYLAR	0.0056MF 5% 50V	C301	1-124-444-00	ELECT	220MF 20% 10V
C127	1-130-480-00	MYLAR	0.0056MF 5% 50V	C302	1-124-444-00	ELECT	220MF 20% 10V
C128	1-136-153-00	FILM	0.01MF 5% 50V	C303	1-124-927-11	ELECT	4.7MF 20% 50V
C129	1-136-157-00	FILM	0.022MF 5% 50V	C304	1-124-927-11	ELECT	4.7MF 20% 50V
C130	1-136-165-00	FILM	0.1MF 5% 50V	C307	1-124-444-00	ELECT	220MF 20% 10V
C132	1-136-272-00	FILM	68PF 5% 630V	C308	1-124-444-00	ELECT	220MF 20% 10V
C133	1-136-433-11	FILM	100PF 5% 630V	C309	1-124-499-11	ELECT	1MF 20% 50V
C134	1-130-471-00	MYLAR	0.001MF 5% 50V	C314	1-124-472-11	ELECT	470MF 20% 6.3V
C135	1-123-875-11	ELECT	10MF 20% 50V	C315	1-136-166-00	FILM	0.12MF 5% 50V
C136	1-124-657-00	ELECT	10MF 20% 50V	C316	1-136-165-00	FILM	0.1MF 5% 50V
C137	1-124-274-00	ELECT	4.7MF 20% 50V	C317	1-162-205-31	CERAMIC	18PF 5% 50V
C138	1-124-927-11	ELECT	4.7MF 20% 50V	C318	1-162-205-31	CERAMIC	18PF 5% 50V
C139	1-124-927-11	ELECT	4.7MF 20% 50V	C319	1-124-446-11	ELECT	47MF 20% 10V
C201	1-110-222-11	MYLAR	0.0012MF 5% 50V	C320	1-124-477-11	ELECT	47MF 20% 16V
C202	1-130-487-00	MYLAR	0.022MF 5% 50V	C321	1-136-230-00	FILM	0.0022MF 5% 100V
C203	1-124-657-00	ELECT	10MF 20% 50V	C322	1-136-230-00	FILM	0.0022MF 5% 100V
C204	1-130-488-00	MYLAR	0.027MF 5% 50V	C323	1-130-856-00	FILM	0.0068MF 5% 100V
C205	1-106-353-00	MYLAR	0.0027MF 5% 50V	C324	1-123-875-11	ELECT	10MF 20% 50V
C206	1-124-927-11	ELECT	4.7MF 20% 50V	C325	1-107-046-00	MICA	4.7PF 0.5PF 500V
				C326	1-136-558-11	FILM	0.0039MF 5% 630V

Ref.No	Part No.	Description	Remark		
C327	1-124-499-11	ELECT	1MF	20%	50V
C328	1-124-499-11	ELECT	1MF	20%	50V
C329	1-124-499-11	ELECT	1MF	20%	50V
C331	1-124-902-00	ELECT	0.47MF	20%	50V
C332	1-130-487-00	MYLAR	0.022MF	5%	50V
C333	1-124-446-11	ELECT	47MF	20%	10V
C334	1-161-379-00	CERAMIC	0.01MF	20%	25V
C335	1-124-443-00	ELECT	100MF	20%	10V
C336	1-124-443-00	ELECT	100MF	20%	10V
C339	1-124-446-11	ELECT	47MF	20%	10V
C340	1-124-446-11	ELECT	47MF	20%	10V
C501	△ 1-124-563-11	ELECT	2200MF	20%	25V
C502	△ 1-124-563-11	ELECT	2200MF	20%	25V
C503	1-124-443-00	ELECT	100MF	20%	10V
C504	1-124-473-11	ELECT	1000MF	20%	10V
C505	1-124-473-11	ELECT	1000MF	20%	10V
C506	△ 1-124-618-11	ELECT	2200MF	20%	35V
C507	△ 1-124-898-11	ELECT	4700MF	20%	16V
C509	1-124-927-11	ELECT	4.7MF	20%	50V
C511	1-124-927-11	ELECT	4.7MF	20%	50V
C512	1-124-887-00	ELECT	3300MF	20%	16V
C513	1-124-927-11	ELECT	4.7MF	20%	50V
C514	1-124-893-11	ELECT	2200MF	20%	6.3V
C515	1-124-122-11	ELECT	100MF	20%	50V
C516	1-124-122-11	ELECT	100MF	20%	50V
C517	1-123-605-00	ELECT	100MF	20%	100V
C518	1-124-122-11	ELECT	100MF	20%	50V
C519	1-124-927-11	ELECT	4.7MF	20%	50V
C520	1-124-477-11	ELECT	47MF	20%	16V
C521	1-124-963-11	ELECT	33MF	20%	16V
C524	1-162-284-31	CERAMIC	150PF	10%	50V
C525	1-162-284-31	CERAMIC	150PF	10%	50V
C526	1-124-927-11	ELECT	4.7MF	20%	50V
C527	1-124-443-00	ELECT	100MF	20%	10V
C528	1-162-294-31	CERAMIC	0.001MF	10%	50V
C529	1-124-443-00	ELECT	100MF	20%	10V
C532	1-162-294-31	CERAMIC	0.001MF	10%	50V
C533	1-162-294-31	CERAMIC	0.001MF	10%	50V
C535	1-124-446-11	ELECT	47MF	20%	10V
C536	1-124-446-11	ELECT	47MF	20%	10V
C537	1-136-166-00	FILM	0.12MF	5%	50V
C538	1-161-494-00	CERAMIC	0.022MF	30%	25V
C539	1-161-494-00	CERAMIC	0.022MF	30%	25V
C540	1-161-494-00	CERAMIC	0.022MF		25V
C801	1-124-446-11	ELECT	47MF	20%	10V
C802	1-162-294-31	CERAMIC	0.001MF	10%	50V
CND308	*1-564-338-71	PIN, CONNECTOR 4P			
CND502	*1-564-337-71	PIN, CONNECTOR 3P			
CND508	*1-564-338-51	PIN, CONNECTOR 4P			
CND509	*1-506-503-11	PIN, CONNECTOR 9P			
CND511	*1-564-339-71	PIN, CONNECTOR 5P			
CND521	*1-564-339-51	PIN, CONNECTOR 5P			
CND522	*1-564-337-51	PIN, CONNECTOR 3P			
CND523	*1-564-337-61	PIN, CONNECTOR 3P			
CND711	*1-564-337-81	PIN, CONNECTOR 3P			
CND801	*1-564-341-51	PIN, CONNECTOR 7P			
CND802	*1-564-337-51	PIN, CONNECTOR 3P			
CNE301	*1-564-509-11	PLUG, CONNECTOR 6P			
CNE302	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE305	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE306	*1-564-508-11	PLUG, CONNECTOR 5P			
CNE311	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE312	*1-564-506-11	PLUG, CONNECTOR 3P			
CNE514	*1-564-506-11	PLUG, CONNECTOR 3P			

Ref.No	Part No.	Description	Remark
CNJ501	*1-558-520-11	CORD (WITH CONNECTOR) (SYNC)	
CNJ502	*1-559-235-11	CORD (WITH CONNECTOR) (CONTROL S)	
CNP303	*1-564-705-21	PIN, CONNECTOR (SMALL TYPE) 3P	
CNP503	1-564-711-11	PIN, CONNECTOR (SMALL TYPE) 9P	
CNP505	*1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P	
CNP507	*1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P	
CP801	1-232-967-11	COMPOSITION CIRCUIT BLOCK	
D101	8-719-940-76	DIODE 1SS132	
D201	8-719-940-76	DIODE 1SS132	
D301	8-719-940-76	DIODE 1SS132	
D302	8-719-940-76	DIODE 1SS132	
D303	8-719-940-76	DIODE 1SS132	
D307	8-719-940-76	DIODE 1SS132	
D308	8-719-940-76	DIODE 1SS132	
D310	8-719-200-02	DIODE 10E2	
D311	8-719-940-76	DIODE 1SS132	
D312	8-719-933-49	DIODE HZS7C1L	
D313	8-719-940-76	DIODE 1SS132	
D314	8-719-940-76	DIODE 1SS132	
D501	△ 8-719-200-02	DIODE 10E2	
D502	△ 8-719-200-02	DIODE 10E2	
D503	△ 8-719-200-02	DIODE 10E2	
D504	△ 8-719-200-02	DIODE 10E2	
D505	△ 8-719-200-02	DIODE 10E2	
D506	△ 8-719-200-02	DIODE 10E2	
D507	8-719-200-02	DIODE 10E2	
D508	△ 8-719-200-02	DIODE 10E2	
D509	△ 8-719-200-02	DIODE 10E2	
D510	8-719-933-33	DIODE HZS6A1L	
D511	8-719-200-02	DIODE 10E2	
D514	8-719-940-76	DIODE 1SS132	
D515	8-719-200-02	DIODE 10E2	
D516	8-719-200-02	DIODE 10E2	
D517	8-719-200-02	DIODE 10E2	
D518	8-719-200-02	DIODE 10E2	
D519	8-719-940-76	DIODE 1SS132	
D520	8-719-933-79	DIODE HZS12C1L	
D521	8-719-933-47	DIODE HZS7B2L	
D522	8-719-200-02	DIODE 10E2	
D523	8-719-940-76	DIODE 1SS132	
D524	8-719-940-76	DIODE 1SS132	
D525	8-719-940-76	DIODE 1SS132	
D526	8-719-940-76	DIODE 1SS132	
D527	8-719-940-76	DIODE 1SS132	
D528	8-719-940-76	DIODE 1SS132	
D530	8-719-940-76	DIODE 1SS132	
D531	8-719-940-76	DIODE 1SS132	
D532	8-719-940-76	DIODE 1SS132	
D534	8-719-933-47	DIODE HZS7B2L	
D540	8-719-933-49	DIODE HZS7C1L	
D548	8-719-940-76	DIODE 1SS132	
D549	8-719-940-76	DIODE 1SS132	
D550	8-719-933-63	DIODE HZS11A1L	
D553	8-719-956-28	DIODE BR5628S	
D554	8-719-941-83	DIODE AY5638S	
D555	8-719-900-79	DIODE BG5628S	
D556	8-719-900-79	DIODE BG5628S	
D801	8-719-940-76	DIODE 1SS132	
D802	8-719-940-76	DIODE 1SS132	
D803	8-719-940-76	DIODE 1SS132	
D804	8-719-301-43	DIODE SEL2410E-C	
D805	8-719-301-43	DIODE SEL2410E-C	
D806	8-719-301-43	DIODE SEL2410E-C	

**Note:**  
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark
D807	8-719-940-85	DIODE GL-5HY5	
D808	8-719-940-85	DIODE GL-5HY5	
D809	8-719-301-43	DIODE SEL2410E-C	
D810	8-719-301-43	DIODE SEL2410E-C	
D811	8-719-940-76	DIODE 1SS132	
D812	8-719-940-76	DIODE 1SS132	
D814	8-719-940-76	DIODE 1SS132	
D815	8-719-940-76	DIODE 1SS132	
FLT801	1-519-447-11	INDICATOR TUBE, FLUORESCENT	
HRP101	X-3391-143-1	HEAD ASSY, ROTARY	
HE101			
IC101	8-759-602-48	IC M5201L	
IC201	8-759-602-48	IC M5201L	
IC301	8-759-602-01	IC M5220P	
IC302	8-752-018-70	IC CX20187	
IC303	8-759-106-41	IC UPC4570C	
IC305	8-759-106-56	IC UPC1297CA	
IC306	8-759-600-02	IC M5218L	
IC307	8-759-112-93	IC UPC4570HA	
IC501	8-759-602-47	IC M50761-417P	
IC502	8-759-803-38	IC LC6520C-3177	
IC503	8-759-240-69	IC TC4069UBP	
IC504	8-759-700-46	IC CX10034	
IC505	8-759-240-19	IC TC4019BP	
IC506	8-759-240-19	IC TC4019BP	
IC801	8-759-971-72	IC MB88517B-510S	
IC802	8-759-140-11	IC UPD4011BC	
J301	1-507-796-21	JACK (HEADPHONES)	
J302	1-565-258-11	JACK, PIN 4P (LINE IN/OUT)	
L101	1-410-780-11	INDUCTOR 27MMH	
L102	1-410-777-11	INDUCTOR 15MMH	
L103	1-410-774-11	INDUCTOR 8.2MMH	
L104	1-410-775-21	INDUCTOR 10MMH	
L201	1-410-780-11	INDUCTOR 27MMH	
L202	1-410-777-11	INDUCTOR 15MMH	
L203	1-410-774-11	INDUCTOR 8.2MMH	
L204	1-410-775-21	INDUCTOR 10MMH	
LPF101	1-236-147-11	FILTER, LOW PASS	
LPF201	1-236-147-11	FILTER, LOW PASS	
M1001	X-3391-130-1	MOTOR ASSY	
M1002	X-3391-156-1	MOTOR ASSY	
PM1001	1-454-440-11	SOLENOID, PLUNGER	
Q101	8-729-100-13	TRANSISTOR 2SC2001	
Q102	8-729-107-91	TRANSISTOR 2SC3622-L	
Q103	8-729-107-91	TRANSISTOR 2SC3622-L	
Q105	8-729-107-91	TRANSISTOR 2SC3622-L	
Q106	8-729-107-91	TRANSISTOR 2SC3622-L	
Q107	8-729-107-91	TRANSISTOR 2SC3622-L	
Q108	8-729-107-91	TRANSISTOR 2SC3622-L	
Q201	8-729-100-13	TRANSISTOR 2SC2001	
Q202	8-729-107-91	TRANSISTOR 2SC3622-L	
Q203	8-729-107-91	TRANSISTOR 2SC3622-L	
Q205	8-729-107-91	TRANSISTOR 2SC3622-L	
Q206	8-729-107-91	TRANSISTOR 2SC3622-L	
Q207	8-729-107-91	TRANSISTOR 2SC3622-L	
Q208	8-729-107-91	TRANSISTOR 2SC3622-L	
Q302	8-729-178-54	TRANSISTOR 2SC2785	
Q303	8-729-900-80	TRANSISTOR DTC114ES	
Q308	8-729-900-61	TRANSISTOR DTA114ES	
Q309	8-729-900-61	TRANSISTOR DTA114ES	
Q311	8-729-900-61	TRANSISTOR DTA114ES	

Ref.No	Part No.	Description	Remark
Q313	8-729-900-61	TRANSISTOR DTA114ES	
Q315	8-729-900-89	TRANSISTOR DTC114ES	
Q316	8-729-195-23	TRANSISTOR 2SA952	
Q317	8-729-600-27	TRANSISTOR 2SC634SP	
Q318	8-729-600-27	TRANSISTOR 2SC634SP	
Q319	8-729-900-80	TRANSISTOR DTC114ES	
Q320	8-729-900-80	TRANSISTOR DTC114ES	
Q501	8-729-224-62	TRANSISTOR 2SK246GR1	
Q502	8-729-178-54	TRANSISTOR 2SC2785	
Q503	8-729-178-54	TRANSISTOR 2SC2785	
Q504	8-729-141-43	TRANSISTOR 2SD414	
Q505	8-729-177-54	TRANSISTOR 2SA1175	
Q506	8-729-177-54	TRANSISTOR 2SA1175	
Q507	8-729-154-83	TRANSISTOR 2SB548	
Q508	8-729-224-62	TRANSISTOR 2SK246GR	
Q509	8-729-178-54	TRANSISTOR 2SC2785	
Q511	8-729-364-72	TRANSISTOR 2SB647	
Q512	8-729-110-68	TRANSISTOR 2SA1409-L	
Q513	8-729-107-26	TRANSISTOR 2SD1585-K	
Q514	8-729-900-74	TRANSISTOR DTC143TS	
Q515	8-729-178-54	TRANSISTOR 2SC2785	
Q516	8-729-180-93	TRANSISTOR 2SD809	
Q518	8-729-107-91	TRANSISTOR 2SC3622-L	
Q519	8-729-900-61	TRANSISTOR DTA114ES	
Q520	8-729-900-80	TRANSISTOR DTC114ES	
Q521	8-729-178-54	TRANSISTOR 2SC2785	
Q522	8-729-900-61	TRANSISTOR DTA114ES	
Q523	8-729-900-61	TRANSISTOR DTA114ES	
Q525	8-729-900-61	TRANSISTOR DTA114ES	
Q526	8-729-801-83	TRANSISTOR 2SB1013	
Q527	8-729-205-02	TRANSISTOR 2SA1150	
Q528	8-729-177-43	TRANSISTOR 2SD774	
Q529	8-729-801-83	TRANSISTOR 2SB1013	
Q530	8-729-801-83	TRANSISTOR 2SB1013	
Q531	8-729-801-93	TRANSISTOR 2SD1387	
Q532	8-729-801-93	TRANSISTOR 2SD1387	
Q533	8-729-801-83	TRANSISTOR 2SB1013	
Q534	8-729-900-61	TRANSISTOR DTA114ES	
Q535	8-729-900-61	TRANSISTOR DTA114ES	
Q536	8-729-900-61	TRANSISTOR DTA114ES	
Q537	8-729-900-80	TRANSISTOR DTC114ES	
Q538	8-729-107-91	TRANSISTOR 2SC3622-L	
Q539	8-729-900-80	TRANSISTOR DTC114ES	
Q540	8-729-900-80	TRANSISTOR DTC114ES	
Q541	8-729-900-61	TRANSISTOR DTA114ES	
Q542	8-729-180-93	TRANSISTOR 2SD809	
Q543	8-729-900-80	TRANSISTOR DTC114ES	
Q544	8-729-178-54	TRANSISTOR 2SC2785	
Q801	8-729-173-38	TRANSISTOR 2SA733K	
Q802	8-729-173-38	TRANSISTOR 2SA733K	
Q803	8-729-178-54	TRANSISTOR 2SC2785	
Q1001	X-3391-141-1	SENDER ASSY	
Q1002	1-807-509-11	PHOTO SENSER	
Q1003	1-807-509-11	PHOTO SENSER	
RESISTOR			
R101	1-214-763-00	METAL 27K	1% 1/4W
R102	1-214-104-00	METAL 68	1% 1/4W
R103	1-249-603-11	CARBON 130K	5% 1/4W
R104	1-214-746-00	METAL 5.1K	1% 1/4W
R105	1-249-431-11	CARBON 15K	5% 1/4W
R106	1-247-717-11	CARBON 2.2K	5% 1/4W
R107	1-247-718-11	CARBON 2.7K	5% 1/4W
R108	1-247-887-00	CARBON 220K	5% 1/4W
R109	1-249-429-11	CARBON 10K	5% 1/4W
R110	1-249-429-11	CARBON 10K	5% 1/4W

## Note:



The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

## Note:


Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark		
R111	1-249-441-11	CARBON	100K	5%	1/4W	R219	1-247-725-11	CARBON	10K	5%	1/4W
R112	1-247-719-11	CARBON	3.3K	5%	1/4W	R225	1-247-717-11	CARBON	2.2K	5%	1/4W
R113	1-247-152-00	CARBON	7.5K	5%	1/4W	R226	1-247-725-11	CARBON	10K	5%	1/4W
R114	1-247-146-00	CARBON	4.3K	5%	1/4W	R227	1-249-421-11	CARBON	2.2K	5%	1/4W
R115	1-249-561-11	CARBON	2.4K	5%	1/4W	R228	1-249-469-11	CARBON	100K	5%	1/4W
R116	1-249-543-11	CARBON	430	5%	1/4W	R229	1-247-723-11	CARBON	6.8K	5%	1/4W
R117	1-249-427-11	CARBON	6.8K	5%	1/4W	R230	1-249-590-11	CARBON	39K	5%	1/4W
R118	1-249-415-11	CARBON	680	5%	1/4W	R231	1-249-596-11	CARBON	68K	5%	1/4W
R119	1-247-725-11	CARBON	10K	5%	1/4W	R232	1-247-723-11	CARBON	6.8K	5%	1/4W
R125	1-247-717-11	CARBON	2.2K	5%	1/4W	R233	1-247-704-11	CARBON	220	5%	1/4W
R126	1-247-725-11	CARBON	10K	5%	1/4W	R234	1-247-152-00	CARBON	8.2K	5%	1/4W
R127	1-249-421-11	CARBON	2.2K	5%	1/4W	R235	1-249-462-11	CARBON	22K	5%	1/4W
R128	1-249-469-11	CARBON	100K	5%	1/4W	R236	1-247-148-00	CARBON	5.1K	5%	1/4W
R129	1-247-723-11	CARBON	6.8K	5%	1/4W	R238	1-249-497-11	CARBON	33K	5%	1/4W
R130	1-249-590-11	CARBON	39K	5%	1/4W	R239	1-247-720-11	CARBON	3.9K	5%	1/4W
R131	1-249-596-11	CARBON	68K	5%	1/4W	R240	1-249-429-11	CARBON	10K	5%	1/4W
R132	1-247-723-11	CARBON	6.8K	5%	1/4W	R241	1-249-429-11	CARBON	10K	5%	1/4W
R133	1-247-704-11	CARBON	220	5%	1/4W	R242	1-249-429-11	CARBON	10K	5%	1/4W
R134	1-247-152-00	CARBON	8.2K	5%	1/4W	R243	1-249-425-11	CARBON	4.7K	5%	1/4W
R135	1-249-462-11	CARBON	22K	5%	1/4W	R244	1-249-432-11	CARBON	18K	5%	1/4W
R136	1-247-148-00	CARBON	5.1K	5%	1/4W	R245	1-247-883-00	CARBON	150K	5%	1/4W
R138	1-249-497-11	CARBON	33K	5%	1/4W	R246	1-249-462-11	CARBON	22K	5%	1/4W
R139	1-247-720-11	CARBON	3.9K	5%	1/4W	R248	1-259-436-11	CARBON	2.2K	5%	1/6W
R140	1-249-429-11	CARBON	10K	5%	1/4W	R249	1-259-459-11	CARBON	20K	5%	1/6W
R141	1-249-429-11	CARBON	10K	5%	1/4W	R250	1-247-704-11	CARBON	220	5%	1/4W
R142	1-249-429-11	CARBON	10K	5%	1/4W	R251	1-214-765-00	METAL	33K	1%	1/4W
R143	1-249-425-11	CARBON	4.7K	5%	1/4W	R252	1-214-729-00	METAL	1K	1%	1/4W
R144	1-249-432-11	CARBON	18K	5%	1/4W	R253	1-214-737-00	METAL	2.2K	1%	1/4W
R145	1-247-883-00	CARBON	150K	5%	1/4W	R254	1-249-421-11	CARBON	2.2K	5%	1/4W
R146	1-249-462-11	CARBON	22K	5%	1/4W	R257	1-249-393-11	CARBON	10	5%	1/4W
R148	1-259-436-11	CARBON	2.2K	5%	1/6W	R260	1-249-429-11	CARBON	10K	5%	1/4W
R149	1-259-459-11	CARBON	20K	5%	1/6W	R262	1-247-713-11	CARBON	1K	5%	1/4W
R150	1-247-704-11	CARBON	220	5%	1/4W	R263	1-249-433-11	CARBON	22K	5%	1/4W
R151	1-214-765-00	METAL	33K	1%	1/4W	R264	1-215-466-00	CARBON	75K	5%	1/4W
R152	1-214-729-00	METAL	1K	1%	1/4W	R265	1-249-397-11	CARBON	22	5%	1/4W
R153	1-214-737-00	METAL	2.2K	1%	1/4W	R266	1-249-434-11	CARBON	27K	5%	1/4W
R154	1-249-421-11	CARBON	2.2K	5%	1/4W	R269	1-249-429-11	CARBON	10K	5%	1/4W
R157	1-249-393-11	CARBON	10	5%	1/4W	R270	1-249-465-11	CARBON	47K	5%	1/4W
R160	1-249-429-11	CARBON	10K	5%	1/4W	R272	1-249-428-11	CARBON	8.2K	5%	1/4W
R162	1-247-713-11	CARBON	1K	5%	1/4W	R301	1-247-704-11	CARBON	220	5%	1/4W
R163	1-249-433-11	CARBON	22K	5%	1/4W	R302	1-247-704-11	CARBON	220	5%	1/4W
R164	1-215-466-00	CARBON	75K	5%	1/4W	R303	1-249-433-11	CARBON	22K	5%	1/4W
R165	1-249-397-11	CARBON	22	5%	1/4W	R304	1-215-469-00	METAL	100K	1%	1/6W
R166	1-249-434-11	CARBON	27K	5%	1/4W	R305	1-249-429-11	CARBON	10K	5%	1/4W
R169	1-249-429-11	CARBON	10K	5%	1/4W	R306	1-249-431-11	CARBON	15K	5%	1/4W
R170	1-249-465-11	CARBON	47K	5%	1/4W	R307	1-249-421-11	CARBON	2.2K	5%	1/4W
R172	1-249-428-11	CARBON	8.2K	5%	1/4W	R308	1-249-405-11	CARBON	100	5%	1/4W
R201	1-214-763-00	METAL	27K	1%	1/4W	R309	1-249-441-11	CARBON	100K	5%	1/4W
R202	1-214-104-00	METAL	68	1%	1/4W	R312	1-249-433-11	CARBON	22K	5%	1/4W
R203	1-249-603-11	CARBON	130K	5%	1/4W	R313	1-249-433-11	CARBON	22K	5%	1/4W
R204	1-214-746-00	METAL	5.1K	1%	1/4W	R314	1-249-441-11	CARBON	100K	5%	1/4W
R205	1-249-431-11	CARBON	15K	5%	1/4W	R326	1-249-429-11	CARBON	10K	5%	1/4W
R206	1-247-717-11	CARBON	2.2K	5%	1/4W	R327	1-249-425-11	CARBON	4.7K	5%	1/4W
R207	1-247-718-11	CARBON	2.7K	5%	1/4W	R328	1-249-429-11	CARBON	10K	5%	1/4W
R208	1-247-887-00	CARBON	220K	5%	1/4W	R329	1-249-429-11	CARBON	10K	5%	1/4W
R209	1-249-429-11	CARBON	10K	5%	1/4W	R330	1-249-425-11	CARBON	4.7K	5%	1/4W
R210	1-249-429-11	CARBON	10K	5%	1/4W	R331	1-249-432-11	CARBON	18K	5%	1/4W
R211	1-249-441-11	CARBON	100K	5%	1/4W	R332	1-249-441-11	CARBON	100K	5%	1/4W
R212	1-247-719-11	CARBON	3.3K	5%	1/4W	R333	1-249-427-11	CARBON	6.8K	5%	1/4W
R213	1-247-152-00	CARBON	7.5K	5%	1/4W	R334	1-249-437-11	CARBON	47K	5%	1/4W
R214	1-247-146-00	CARBON	4.3K	5%	1/4W	R335	1-249-437-11	CARBON	47K	5%	1/4W
R215	1-249-561-11	CARBON	2.4K	5%	1/4W	R336	1-212-849-00	FUSIBLE	4.7	5%	1/4W
R216	1-249-543-11	CARBON	430	5%	1/4W	R337	1-249-405-11	CARBON	100	5%	1/4W
R217	1-249-427-11	CARBON	6.8K	5%	1/4W	R338	1-249-425-11	CARBON	4.7K	5%	1/4W
R218	1-249-415-11	CARBON	680	5%	1/4W	R340	1-249-433-11	CARBON	22K	5%	1/4W

**Note:**



The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.


**Note:**

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark
R341	1-249-417-11	CARBON 1K 5%	1/4W
R343	1-249-417-11	CARBON 1K 5%	1/4W
R346	1-247-717-11	CARBON 2.2K 5%	1/4W
R347	1-249-429-11	CARBON 10K 5%	1/4W
R503	1-214-713-00	METAL 220 1%	1/4W
R504	1-214-731-00	METAL 1.2K 1%	1/4W
R505	1-214-723-00	METAL 560 1%	1/4W
R506	1-247-725-11	CARBON 10K 5%	1/4W
R507	1-214-721-00	METAL 470 1%	1/4W
R508	1-249-433-11	CARBON 22K 5%	1/4W
R511	1-214-747-00	METAL 5.6K 1%	1/4W
R512	1-214-755-00	METAL 12K 1%	1/4W
R513	1-249-462-11	CARBON 22K 5%	1/4W
R514	1-247-721-11	CARBON 4.7K 5%	1/4W
R515	1-249-426-11	CARBON 5.6K 5%	1/4W
R516	1-249-417-11	CARBON 1K 5%	1/4W
R517	1-247-717-11	CARBON 2.2K 5%	1/4W
R518	1-247-752-11	CARBON 1K 5%	1/2W
R519	1-249-405-11	CARBON 100 5%	1/4W
R520	1-249-432-11	CARBON 18K 5%	1/4W
R521	1-249-430-11	CARBON 12K 5%	1/4W
R522	1-249-393-11	CARBON 10 5%	1/4W
R523	1-249-433-11	CARBON 22K 5%	1/4W
R524	1-247-903-00	CARBON 1M 5%	1/4W
R525	1-249-422-11	CARBON 2.7K 5%	1/4W
R526	1-249-441-11	CARBON 100K 5%	1/4W
R528	1-249-429-11	CARBON 10K 5%	1/4W
R529	1-247-903-00	CARBON 1M 5%	1/4W
R530	1-249-429-11	CARBON 10K 5%	1/4W
R531	1-249-417-11	CARBON 1K 5%	1/4W
R532	1-249-437-11	CARBON 47K 5%	1/4W
R533	1-249-433-11	CARBON 22K 5%	1/4W
R534	1-249-433-11	CARBON 22K 5%	1/4W
R535	1-249-437-11	CARBON 47K 5%	1/4W
R536	1-249-437-11	CARBON 47K 5%	1/4W
R537	1-249-430-11	CARBON 12K 5%	1/4W
R538	1-249-425-11	CARBON 4.7K 5%	1/4W
R539	1-249-430-11	CARBON 12K 5%	1/4W
R540	1-247-708-11	CARBON 470 5%	1/4W
R541	1-249-433-11	CARBON 22K 5%	1/4W
R542	1-249-433-11	CARBON 22K 5%	1/4W
R543	1-215-398-00	CARBON 110 5%	1/4W
R544	1-249-425-11	CARBON 4.7K 5%	1/4W
R551	1-249-413-11	CARBON 470 5%	1/4W
R552	1-249-413-11	CARBON 470 5%	1/4W
R553	1-249-413-11	CARBON 470 5%	1/4W
R554	1-249-413-11	CARBON 470 5%	1/4W
R555	1-249-413-11	CARBON 470 5%	1/4W
R556	1-249-413-11	CARBON 470 5%	1/4W
R557	1-249-413-11	CARBON 470 5%	1/4W
R558	1-249-413-11	CARBON 470 5%	1/4W
R559	1-249-413-11	CARBON 470 5%	1/4W
R561	1-249-433-11	CARBON 22K 5%	1/4W
R562	1-249-433-11	CARBON 22K 5%	1/4W
R563	1-249-433-11	CARBON 22K 5%	1/4W
R564	1-249-433-11	CARBON 22K 5%	1/4W
R565	1-249-433-11	CARBON 22K 5%	1/4W
R566	1-249-433-11	CARBON 22K 5%	1/4W
R567	1-249-433-11	CARBON 22K 5%	1/4W
R568	1-249-433-11	CARBON 22K 5%	1/4W
R569	1-249-433-11	CARBON 22K 5%	1/4W
R570	1-249-433-11	CARBON 22K 5%	1/4W
R571	1-249-433-11	CARBON 22K 5%	1/4W
R572	1-249-433-11	CARBON 22K 5%	1/4W
R578	1-249-431-11	CARBON 15K 5%	1/4W

Ref.No	Part No.	Description	Remark
R579	1-249-425-11	CARBON 4.7K 5%	1/4W
R580	1-249-430-11	CARBON 12K 5%	1/4W
R581	1-215-452-00	CARBON 20K 5%	1/4W
R582	1-249-435-11	CARBON 33K 5%	1/4W
R583	1-249-435-11	CARBON 33K 5%	1/4W
R584	1-247-887-00	CARBON 220K 5%	1/4W
R585	1-247-887-00	CARBON 220K 5%	1/4W
R586	1-249-408-11	CARBON 180 5%	1/4W
R587	1-249-408-11	CARBON 180 5%	1/4W
R590	1-249-423-11	CARBON 3.3K 5%	1/4W
R591	1-249-423-11	CARBON 3.3K 5%	1/4W
R592	1-249-417-11	CARBON 1K 5%	1/4W
R593	1-249-415-11	CARBON 680 5%	1/4W
R594	1-249-421-11	CARBON 2.2K 5%	1/4W
R595	1-249-417-11	CARBON 1K 5%	1/4W
R596	1-249-417-11	CARBON 1K 5%	1/4W
R597	1-249-417-11	CARBON 1K 5%	1/4W
R598	1-249-417-11	CARBON 1K 5%	1/4W
R599	1-249-418-11	CARBON 1.2K 5%	1/4W
R601	1-249-413-11	CARBON 470 5%	1/4W
R602	1-249-425-11	CARBON 4.7K 5%	1/4W
R604	1-249-435-11	CARBON 33K 5%	1/4W
R605	1-249-433-11	CARBON 22K 5%	1/4W
R606	1-249-441-11	CARBON 100K 5%	1/4W
R607	1-249-409-11	CARBON 220 5%	1/4W
R608	1-249-409-11	CARBON 220 5%	1/4W
R801	1-249-441-11	CARBON 100K 5%	1/4W
R802	1-249-441-11	CARBON 100K 5%	1/4W
R803	1-249-441-11	CARBON 100K 5%	1/4W
R804	1-249-441-11	CARBON 100K 5%	1/4W
R805	1-249-441-11	CARBON 100K 5%	1/4W
R806	1-249-441-11	CARBON 100K 5%	1/4W
R807	1-249-441-11	CARBON 100K 5%	1/4W
R808	1-249-441-11	CARBON 100K 5%	1/4W
R809	1-249-441-11	CARBON 100K 5%	1/4W
R816	1-249-441-11	CARBON 100K 5%	1/4W
R817	1-249-441-11	CARBON 100K 5%	1/4W
R818	1-249-421-11	CARBON 2.2K 5%	1/4W
R819	1-249-421-11	CARBON 2.2K 5%	1/4W
R820	1-247-712-11	CARBON 820 5%	1/4W
R822	1-249-410-11	CARBON 270 5%	1/4W
R823	1-249-437-11	CARBON 47K 5%	1/4W
R824	1-249-429-11	CARBON 10K 5%	1/4W
R825	1-249-437-11	CARBON 47K 5%	1/4W
R826	1-249-437-11	CARBON 47K 5%	1/4W
R827	1-249-429-11	CARBON 10K 5%	1/4W
R828	1-249-425-11	CARBON 4.7K 5%	1/4W
R829	1-249-429-11	CARBON 10K 5%	1/4W
R830	1-249-423-11	CARBON 3.3K 5%	1/4W
R837	1-249-437-11	CARBON 47K 5%	1/4W
R838	1-249-429-11	CARBON 10K 5%	1/4W
R839	1-249-429-11	CARBON 10K 5%	1/4W
RV101	1-228-994-00	RES, ADJ, CARBON 10K	
RV103	1-228-994-00	RES, ADJ, CARBON 10K	
RV104	1-228-995-00	RES, ADJ, CARBON 22K	
RV201	1-228-994-00	RES, ADJ, CARBON 10K	
RV203	1-228-994-00	RES, ADJ, CARBON 10K	
RV204	1-228-995-00	RES, ADJ, CARBON 22K	
RV301	1-238-097-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	
RV302	1-230-313-00	RES, VAR, CARBON 20K/20K (HEADPHONES LEVEL)	
RV501	1-228-995-00	RES, ADJ, CARBON 22K	
RY301	1-515-683-11	RELAY	
S301	Δ1-570-103-21	SWITCH, PUSH (1 KEY) (POWER)	

**Note:**  
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description	Remark
S302	1-571-369-11	SWITCH, PUSH (3 KEY) (DOLBY NR/DIRECTION MODE)	
S303	1-554-423-00	SWITCH, SLIDE (TIMER)	
S501	1-554-303-21	SWITCH, KEY BOARD (■)	
S502	1-554-303-21	SWITCH, KEY BOARD (◀◀)	
S503	1-554-303-21	SWITCH, KEY BOARD (▶▶)	
S504	1-554-303-21	SWITCH, KEY BOARD (▶)	
S505	1-554-303-21	SWITCH, KEY BOARD (◀)	
S506	1-554-303-21	SWITCH, KEY BOARD (●)	
S507	1-554-303-21	SWITCH, KEY BOARD (■)	
S508	1-554-303-21	SWITCH, KEY BOARD (○)	
S509	1-554-303-21	SWITCH, KEY BOARD (TAPE OPERATION)	
S801	1-554-303-21	SWITCH, KEY BOARD (RESET)	
S802	1-554-303-21	SWITCH, KEY BOARD (MEMORY)	
S1001	1-570-720-11	SWITCH, PUSH	
S1002	1-570-720-11	SWITCH, PUSH	
S1005	1-570-720-11	SWITCH, PUSH	
S1006	1-570-719-11	SWITCH, LEAF	
S1007	1-570-721-11	SWITCH, LEAF	
SPK101	1-235-186-00	ENCAPSULATED COMPONENT	
SPK201	1-235-186-00	ENCAPSULATED COMPONENT	
T101	1-433-335-11	TRANSFORMER, BIAS OSCILLATION	
T201	1-433-335-11	TRANSFORMER, BIAS OSCILLATION	
T302	1-433-336-11	TRANSFORMER, BIAS OSCILLATION	
T501	△ 1-449-270-11	(US, Canadian).....TRANSFORMER, POWER	
T501	△ 1-449-271-11	(AEP, UK).....TRANSFORMER, POWER	
THP501	△ 1-202-850-00	SOLID 2.2 1/4W F	
THP502	△ 1-202-850-00	SOLID 2.2 1/4W F	
TP1	*1-564-506-11	PLUG, CONNECTOR 3P	
TP2	*1-564-505-11	PLUG, CONNECTOR 2P	
TP3	*1-564-506-11	PLUG, CONNECTOR 3P	
X501	1-567-772-11	VIBRATOR, CERAMIC (4.19MHz)	
X502	1-527-532-00	OSCILLATOR, CERAMIC (400KHz)	
X801	1-567-771-11	VIBRATOR, CERAMIC (6MHz)	

## ACCESSORY &amp; PACKING MATERIAL

Part No.	Description	Remark
1-551-734-11	CORD, CONNECTION (RK- 74A)	
1-558-233-11	CORD (WITH CONNECTOR) (SIRCS) 4P	
*3-332-556-21	INDIVIDUAL CARTON	
3-346-203-01	CUSHION	
*3-704-346-01	SHEET (STANDARD), PROTECTION	
3-769-978-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH : EXCEPT FOR US)	
3-769-978-21	MANUAL, INSTRUCTION (ENGLISH : US)	
3-769-978-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN : AEP)	

## Note:

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

## Note:

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

**TROUBLESHOOTING GUIDE**

FUNCTION BUTTONS AND TAPE TRANSPORT PROBLEMS		
Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
Playback or recording begins just as the power is turned on.	The TIMER switch is not set to OFF.	Set the TIMER switch to OFF.
● button does not activate.	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape.
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
	The MEMORY function is activated.	Press the MEMORY button to deactivate the function.
	The inside of the cassette holder is illuminated by strong light.	Remove the light source.
Excessively loud tape transport noise when rewinding or fast-forwarding	This depends on the cassette used and is not a problem.	—
The cassette holder does not open.	▲ button was pressed immediately after the ◀, ▶ or ■ button was pressed.	Turn the power off, and then press the button.

RECORDING AND PLAYBACK PROBLEMS		
Symptom	Cause	Remedy
Quick reverse function does not operate.	DIRECTION MODE selector is released □ (↩).	Depress the selector and set to ▢ (↞).
Recording or playback cannot be made or there is a decrease in sound level.	Record/playback and erase heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection	Make connections properly.
	Improper setting of the amplifier controls	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions.
Incomplete erasure	Erase head is dirty.	Clean the erase head.
Increased noise or poor reproduction in high frequencies	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies	Improper setting of the DOLBY NR switches.	During playback, set the switches to the same position used in recording.
	The unit is placed near a television set.	Move the deck away from the television set.
The desired selection cannot be located even if you activate the AMS.	There is noise in the space between selections.	—
	The space is less than 4 seconds long.	Press ○ to insert a longer blank space.
	The ◀◀ or ▶▶ button is pressed immediately before or after the beginning of the following selection.	—
Playback or fast-winding may begin in the middle of the selection when AMS or blank skip is activated.	The following will be treated as blanks: — a long pause in the music — a passage of low frequencies or very low volume — gradual increase or decrease of volume	—

NOISE		
Symptom	Cause	Remedy
Hum noise	The deck is stacked on or under the amplifier.	Separate the units.
Noise is recorded.	Recording was made near such equipment as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from the television set or color monitor.